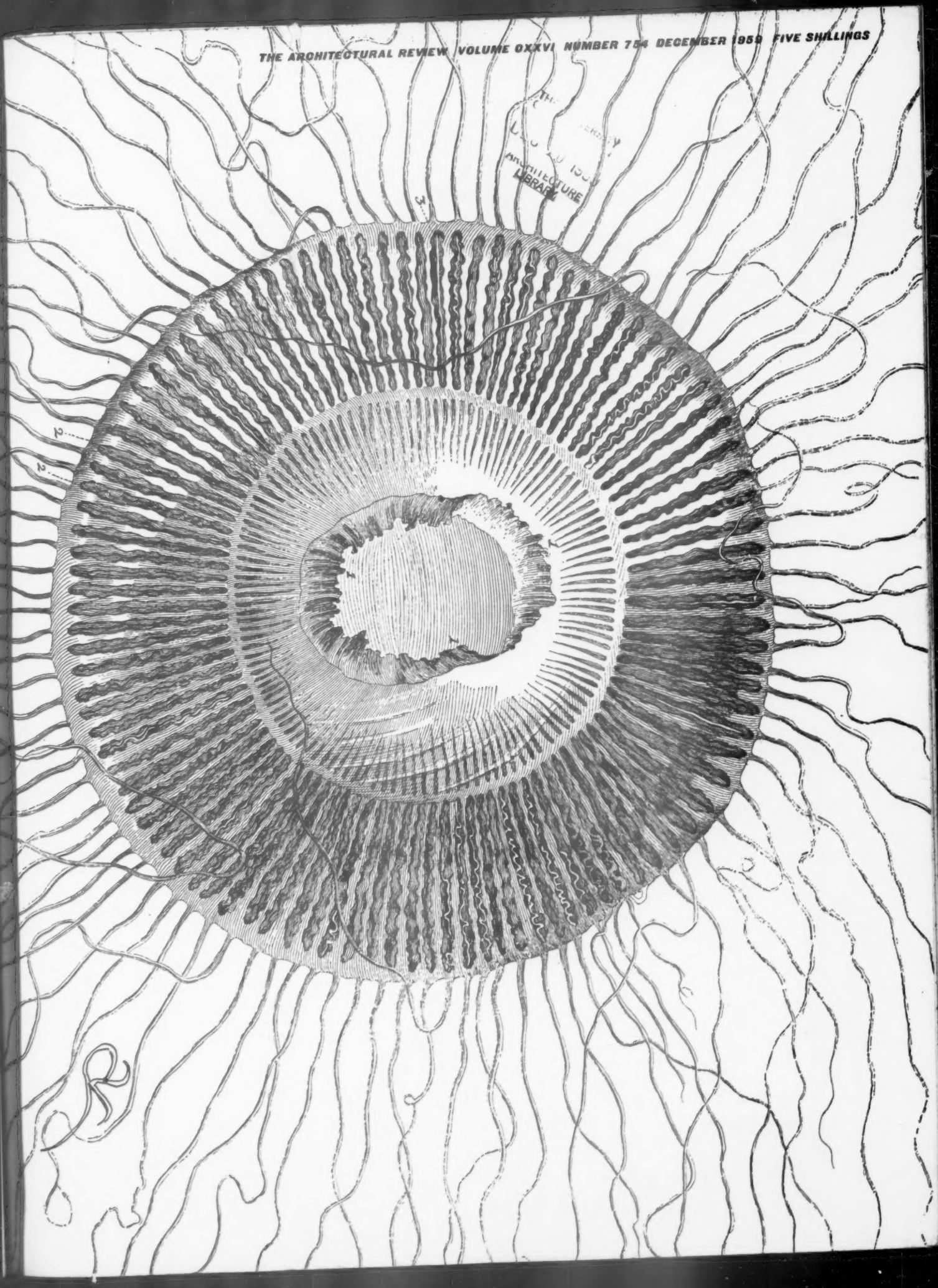
THE ARCHITECTURAL REVIEW VOLUME CXXVI NUMBER 754 DECEMBER 1959 FIVE SHILLINGS

ARCHITECTURE LIBRARY



the Flexwoodpecker

—not a very game bird!

Flex those muscles, Flexwoodpecker! It's your week-end in the country. Tally ho! for the great outdoors. Ah yes, we know you're *pining* for your panelling. Home, sweet cosy home, with its Flexwood panelling. The club, the pub, the office—all with Flexwood panelling. So civilised and elegant. It's just as well you knew that architect who recommended Flexwood. A bright chap—the *right* chap—who's clad your walls with Flexwood.

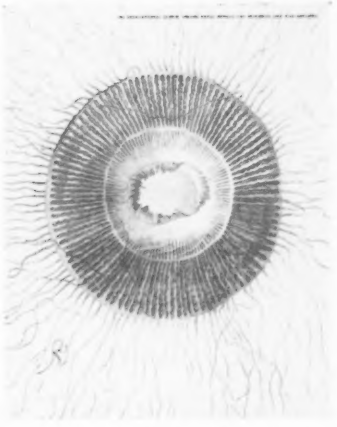
FLEXWOOD—for room panelling at remarkably reasonable cost. This top quality sliced veneer is mounted on cloth backing. It comes in a wide range of superb European and overseas hardwoods; it is applied direct to plaster or any other smooth dry surface—even a curved surface—and it cannot warp.

For details of the complete Flexwood service, contact:
ALEXANDRIA TRADING CORPORATION LTD.
121 LONDON WALL E.C.2. PHONE: MONARCH 2272

Flexwood

THE ARCHITECTURAL REVIEW

Volume 126 Number 754 December 1959



The cover reproduces, slightly larger than the original, plate *XXX, Medusa Octostyla*, from the *Icones Rerum Naturalium* (1776) of Petrus Forsskal. Although he died at the early age of thirty-one, Forsskal was one of the outstanding pupils of Linnaeus, and the posthumous books based on his researches are considered to be classics of the systematic literature of Natural History. Such systematic studies, and the speculative hypotheses based on them in the late eighteenth century, were the foundations of the new science of biology whose profound and various influence on architectural thought is discussed by Peter Collins in an article on pp. 303-305, to honour the centenary of the most influential biological work of all, *The Origin of Species*.

Directing Editors	J. M. Richards Nikolaus Pevsner H. de C. Hastings Hugh Casson
Executive Editor	J. M. Richards
Assistant Executive Editor	Reyner Banham
Assistant Editor (Production)	Moira Mathieson
Features Editor	Kenneth Browne
Technical Editor	Lance Wright
Assistant Editor (Counter-Attack)	Ian Nairn
Staff Photographers	De Burgh Galwey W. J. Toomey

SUBSCRIPTION RATE: The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in U.S.A. and Canada $10.50, in Italy Lire 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: A. Salto, Via Santo Spirito 14, Milano; Librerie Dedalo, Via Barberini 75-77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW.

THE ARCHITECTURAL REVIEW
9-13 Queen Anne's Gate, Westminster, SW1
Whitehall 0611 Five Shillings

299 **Book Reviews**

300 **Marginalia**

302 **Frontispiece**

303 **Biological Analogy** *by Peter Collins*

307 **University Library, Sheffield:** *Architects, Gollins, Melvin, Ward and Partners*

315 **Curriculum** *by James Gowan*

324 **Three Churches**

Methodist Church, Mitcham: *Architect, Edward D. Mills*

Roman Catholic Church, Lancaster: *Architect, Tom Mellor*

Reconstructed Parish Church, Tolworth: *Architect, Kenneth Wood*

332 **Knightsbridge Green** *by Kenneth Browne*

337 **Interior Design**

Glass Showroom in St. James's, London: *Architect, Margaret Casson*

Flat in Eaton Square, London: *Architect: Margaret Casson*

340 **Design Review**

341 **Neoliberty: the Debate**

345 **World**

347 **Churches of the Puna de Atacama** *by Paul Dony*

350 **Current Architecture**

Miscellany

354 **Exhibitions**

356 **History**

357 **Functional Tradition**

358 **Counter Attack**

359 **Skill**

Polyester Fibreglass *by Michael Brawne*

364 **The Industry**

366 **Contractors**

BOOK REVIEWS

After Roman, Before Gothic

CAROLINGIAN AND ROMANESQUE ARCHITECTURE 800-1200. *By Kenneth John Conant. Penguin Books (The Pelican History of Art)*, 1959. 70*s*.

The western world saw two great periods of architectural invention (before the modernism of our own time), the Classical, and the Gothic. The former, created by Greeks, was codified by Rome and exported throughout the Empire; the origins of the latter still have elements of mystery. It is in probing this mystery that many students are drawn to investigate the middle of the sandwich: what came between, the running-down of the Roman style and the various importations which prolonged its life. For in spite of great changes the buildings of the period that closed in the twelfth century A.D. are a continuation of the story of Roman architecture, and are rightly termed Romanesque.

It was during this period that there arose the administrative and technical methods that were to characterize also the later, Gothic, Middle Ages, and for that reason if for no other an adequate assessment of the Romanesque achievement has long been needed. In the work now under review, Professor Conant has admirably summed up the mighty works covered by a field of study which he has made specially his own. The book is a notable contribution to scholarship, written in clear, readable English. Its text abounds in pithy passages: 'The practical working systems which produce a building are more important than literary-minded critics suspect' (page 57); the Hungarian invasions of 937 and 955 'stirred the Burgundians to undertake fireproof vaulted construction' (page 80); 'Cluniac psalmody . . . was most beautiful when sung in vaulted churches. Thence, a general stimulus for vaulting' (page 109).

The author's very wide travels before the war of 1939–45 have enabled him to note at first-hand much that is now lost, while more recent discoveries are reported down to c. 1954, the date of the Foreword. The difficulties of compilation and publication at the present day are emphasized by the subsequent lapse of time, and by references such as that to Poblet as still 'desolate' (page 132), whereas it was handed back to the Cistercians in 1940. The traditional date of 1063 is still accepted without comment for the design of Pisa Cathedral by Buschetus (page 232), though recent opinion prefers c. 1089. Other minor criticisms are that the less known place-names are inadequately identified in the text and index, though most of them can be found on the

admirable series of maps; and that some unfamiliar terms are introduced without benefit of glossary (e.g. 'rat-tail' for toothing, pages 119, 308).

Detailed commentary on this most important study is here impossible, but some of its illuminating generalizations must be mentioned. Professor Conant rightly stresses the fact that until c. 1050 the technique of the Rhineland was substantially ahead of that of France, while the great 'colonial' expansion of French Romanesque to England and Spain led to further remarkable improvements (the cross-sectional area of the supports at Santiago de Compostela is only about one-quarter of that at St.-Bénigne, Dijon). The author's intimate knowledge of Cluny has yielded a clear statement regarding modular systems of planning and design (page 116 and pages 306–7), where the symbolic systems of Pythagoras, Plato, and Isidore of Seville are convincingly demonstrated as in actual mediaeval use.

It should be added that the choice and reproduction of illustrations (a number from Professor Conant's own very fine drawings) in this volume more than maintain the high standard set by this notable series.

John Harvey

The Technological Eye

THE NEW LANDSCAPE IN ART AND SCIENCE, *By Professor G. Kepes. Paul Theobold & Co. Chicago.* $15.50.

This is easily one of the most fascinating and stimulating books to come from the United States since the war. It is difficult to do it justice in a few words or even by selecting a few of its 453 illustrations.

The author's premise is that technical and scientific progress has given such added potential widths and depths to our vision that a new world has been discovered, hitherto unknown and unseen, except perhaps intuitively by the painter or the sculptor. Exploration of this vision is going on independently by specialists in different directions. The exhibition at the MIT from which the illustrations in the book are taken was the first attempt to show examples of these varied visual experiences in juxtaposition; 'The discovery of this new landscape is a challenge to correlate all this material to form a new integrated vision through the rational understanding of the world (the knowledge frozen in words and quantities) and the emotional (the knowledge vested in sensory images and feelings).' The electronic microscope can show us matter the size of a thumbnail enlarged to the distance between New York and London, and the radio telescope can make things visible in outer space, which at best could only be guessed at hitherto; the radiograph makes us see into and across matter, spectral stress patterns can be photographed projecting movement in time into diagrams, signals can be translated into pictures and vice versa. The extraordinary thing is how almost identical patterns and images are perceived by the astronomer looking through the radio telescope into space, by the scientist through the electronic microscope into molecular matter and, most curious of all, by the artist—usually consciously quite unaware of scientific and technical vision. However, to see side by side the graph of the movement of a pendulum, a sculpture by Gabo, a diagram of sound waves, an x-ray defraction pattern of a crystal, or cosmic ray showers, together with an abstract painting, proves that somehow there must be a higher order which imposes such common denominators on such heterogeneous phenomena.

Professor Kepes having introduced the problem has called on specialists in all fields, ranging from Gropius and Giedion to Arp, Leger and Gabo to philosophers, poets and scientists, so that each specialist contributor could give an explanation of this new vision in his field.

Although there is no conclusion—because it is too early yet to arrive at one—the book is so thought-provoking and exciting that anyone interested in things visual can't afford not to peruse it.

F. H. K. Henrion

Material Consideration

VITA DEI MATERIALI NELLA ARCHITETTURA. *By Giulio Roisecco. Soc. Ed. Vitali Ghiunda, Genoa. Lire* 3000.

Professor Roisecco teaches Structure at Rome University. He is a pupil of Nervi, and Nervi is quoted in the foreword: 'In your accurate study you have shown the manifold relations between building materials and architecture, and drawn attention to the practical, the structural, and the aesthetic importance of their rational and proper use. This seems to be a very opportunely timed job, for the sensible use of materials, is an essential condition of any correct architectural achievement.' The author often refers to Nervi and about as often to Wright and Neutra. Among his illustrations are some from Japan, others from the Italian Middle Ages and Renaissance, yet others from Germany. The juxtapositions are stimulating and the equal sympathy for the past and present are gratifying and incidentally very Italian. The chapters of the book deal with the supply of materials, local traditions, the use of materials, the influence of climate and locality, and finally architectural expression. The 180 illustrations are excellently chosen but poorly printed and the long captions sometimes get dangerously near to padding. The book is paper bound and considering this, rather expensive.

N.P.

The Complete Works

SPECIFICATION 1959. *Editor: F.R.S. Yorke, F.R.I.B.A. Asst Editor. : Penelope Whiting, A.R.I.B.A. Architectural Press.* 35*s*.

The latest edition of this reference book includes an extensive revision of Carpenter and Joiner to keep pace with recent developments in the use of timber both as a structural and a finishing material. For example, an entirely new section, Timber Engineering, contributed by D. W. Cooper, has been included which deals with structural uses of timber in all its forms from portal frames in laminated construction spanning up to 75 ft. to the humble, but highly efficient, small-span trusses designed by the Timber Development Association. The use of timber as a finishing material includes an exhaustive analysis of plywoods and other building boards. Timber also features in the section on Curtain Walling where several proprietary systems in timber are included.

The publication of a new Code of Practice has necessitated considerable revision of Roofer and several new materials have been included. New equipment, materials and methods of construction have also caused revisions to the sections on Electrical Engineer, Piling, Structural Aluminium and Shops.

Specification specimen clauses are of the usual high standard. It is interesting to note that the Editors considered substituting check lists for full specimen clauses, but rejected the idea after experiments proved that in many cases the headings without the clauses were useless or confusing. Specification writers who regularly use this sturdy volume will surely applaud the Editors' decision to retain the existing system.

G.T.

MARGINALIA

Coalbrookdale Museum

The 250th anniversary of the first successful use of coke in iron-smelting has been celebrated by the conversion of the place where this innovation took place—Abraham Darby's furnace in Coalbrookdale—into a museum. As a monument in the history of western technology, the site is of extreme importance, comparable to the remains of the Bessemer plant at Sandvicken (Marginalia, AR, October, 1958) and the formation of a museum, housing a good deal of the history and productions of the Darby family, in the heart of the characteristic early-industrial land/townscape they helped to create, is to be applauded as an imaginative and responsible action on the part of Allied Ironfounders. Unfortunately, the visual and architectural problems attendant in the setting up of this kind of 'on-site' museum have been handled in a manner that falls far below the standards set at Sandvicken, or in the LCC's handling of the *Cutty Sark*. Thus, the gates and lamp-standard in

1

1, are not original, but a rather pedestrian reproduction, as the date reveals, while to their right the whole treatment relapses into municipal grass and chain-link fencing. Neither part of this fence—the quasi-monumental or the semi-subtopian—matches up to the character of the architecture of the furnaces, 2, nor does it make an adequate foil to it. Let us hope that when, as seems inevitable, the scheme has to be extended, an effort will be made to bring the new work up to the standard of the old.

To the Lighthouse—Again

The last lighthouse to be built in England was erected before Modern Architecture began, over half a century ago, and the technical and architectural history of lighthouses in this country will jump straight from mass-walling in masonry, and oil or gas lighting (as things were at the time of design) to prestressed, post-tensioned concrete, electric lanterns of 600,000 candlepower, and automatic fog-warnings, when the second Dungeness light is completed in the next few months. The new lighthouse is a plain

3

cylinder in form, 3, designed by Ronald Ward and Partners, with prestressing cables taken from various heights, down through the thickness of the walls of the pre-cast drums of which it is built, to anchorages in the foundations. A spiral ramp to a public observation-platform surrounds the base, and there is a 'belfry grille' of precast, trumpet-shaped

2

4, altar frontal for Swansea Parish Church, designed and executed by Margaret Kaye.

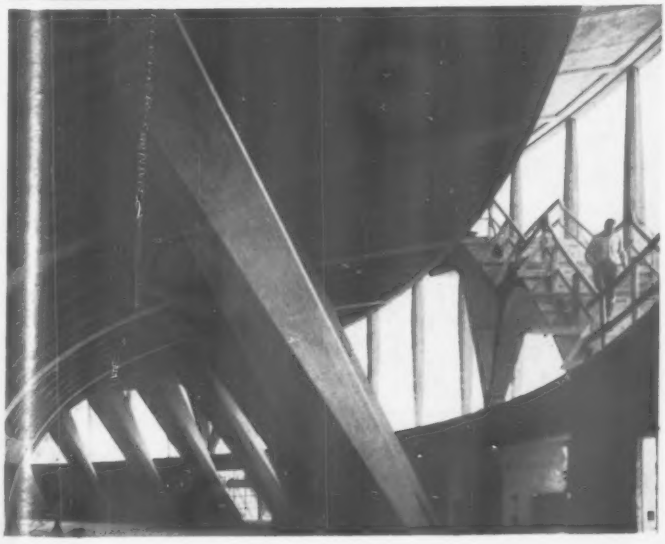
units near the top to emit the sound of the foghorn. The functional-traditional black-and-white banding is not painted, but is formed by a permanent finish of specially selected aggregate with suitably coloured cements.

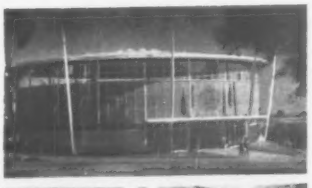
Roman Games

Two recent photographs, 5 and 6, by G. E. Kidder Smith, of the nearly completed circular covered stadium at Rome, the Palazzo dello Sport, for the 1960 Olympic Games. The designer is Pier Luigi Nervi.

First Permanent UK Pavilion

Whatever the political or economic reasons that prompted its erection, the appearance of a permanent British pavilion (the first of its kind) on the Rand Show site at Johannesburg is a welcome development in Board of Trade policy toward overseas exhibitions. The pavilion itself, 8, designed by Fleming and Cooke, is a simple rotunda, covered by a dome 110 feet in diameter, whose weight is only partly carried by the rotunda, some of the permanent roof loads, as well as the wind loads, being transferred by guy-wires to ten masts evenly spaced around the structure. Internally, 9, there is a mezzanine floor served by two spiral ramps, one inside and the other outside the building, and the minimum of other permanent structures (apart from a small cinema) so that the space can be as adaptable as possible for different kinds of exhibits. It is to be hoped that positive action on this scale will be followed by equally positive action over the next *Triennale di Milano*, and other international exhibitions of comparable status.





Canals in Safe Keeping

Among other good things in the 1958-59 report of the National Trust is the news that two stretches of canal are in process of negotiation for acquisition by the Trust and that the negotiations, though complex, are in a very advanced stage. The two stretches in question are from Lapworth to Stratford on the Stratford-on-Avon Canal, the other is the southern section (Stourport, Kidderminster, Kinver) of the Staffordshire and Worcestershire Canal. Both, of course, come within the category of places of natural beauty (whatever its man-made basis) that the Trust is empowered to acquire, but both are also, of course, monuments of early industrialism, and it is to be hoped that these acquisitions may establish a flexible precedent that can be stretched to cover other uneconomic, but scenically and historically valuable canals, with the ultimate aim of creating a canal-side linear National Park.

Let there be Light

7, Brunel's suspension bridge at Clifton, near Bristol, was illuminated to mark the centenary of his death and thus provided a spectacular new view of one of the most important monuments in the west of England. The illuminations have now been removed and it seems that there are no plans to repeat them next year—it is a great pity that so successful an experiment should not lead to an annual lighting-up of the bridge and it is to be hoped that the Bristol City Fathers will have second thoughts before next summer.

ACKNOWLEDGMENTS

MARGINALIA, pages 299–301: 3, the Builder; 5, 6, Kidder Smith; 7, Bromhead (Bristol); 8, 9, Industrial Architecture. FRONTISPIECE, page 302: Paul Dony. UNIVERSITY LIBRARY, SHEFFIELD, pages 307–314: 1, AR Aerial Unit; remainder, Henk Snoek. CURRICULUM, pages 315–323: 3, King's College, Newcastle; remainder, James Gowan. THREE CHURCHES, pages 324–331: 1, 4, 5, Edward D. Mills; 2, 3, 6, Henk Snoek; 7, 9, Cecil Thomas; 8, 10–13, 15, 16, 18–21, Galwey Arphot. INTERIOR DESIGN, pages 337–339: Toomey Arphot. DESIGN REVIEW, page 340: 1, Austin Motor Co.; 4, Nuffield Organisation. WORLD, pages 345–346: 1, Photogrameiricos; 2, Pando photograph; 3, Plasencia; 4, Moncloa; 5, Arkitektur; 6–8, Domus; 9, 10, Alexandre Georges, Exhibition of Structures by Buckminster Fuller. CHURCHES OF THE PUNA DE ATACAMA, pages 347–349: Paul Dony. CURRENT ARCHITECTURE, pages 350–353: 1–3, Wainwright; 4, Denys Lasdun; 5, John Maltby; 6, Tothill Press; 7–9, Galwey Arphot. MISCELLANY, pages 354–358: Exhibitions, 2, Gimpel Fils; 3, 4, James Mortimer; 6, Laboratorio Fotografico. History, Country Life. Functional Folly, 1, 4, 9, John Piper; 2, 3, 6, 8, 10, J. M. Richards; 5, Marcus Whiffen; 7, Galwey Arphot. Counter Attack, Andor Gomme. SKILL, pages 359–363: 2, Turners Photography; 3, 5, 15, 16, Monsanto Chemical Co.; 4, John Adams/Bakelite; 6, E. J. Jackson/Bakelite; 7, Bakelite; 11, Giornalfoto Milano; 12, 14, Publifoto; 13, Lee Angle Photography; 17, Monsanto Chemical Co./Robert C. Cleveland; 18, Hubert Davey/Bakelite; 19, Polyfoto; 20, Willy Kessels. THE INDUSTRY, pages 364–368: 5, Deighton Wilkes and Co.

The armed angel of Caeabindo, opposite *is one of the angeles caballeros who may be found in paintings in some of the churches along the* Camino de los Incas *high on the Argentine side of the Andes. The musket he carries is an entirely proper attribute for a guardian angel in this bleak land that has always been one of the frontier territories of the human race, as well as of the Christian religion, and the primitive churches of the region, together with their hard-won decoration, are the subject of an article on pages 347–349.*

Peter Collins

BIOLOGICAL ANALOGY

1959 marks the centenary of The Origin of Species, *a work that threatened at one time to make biology the master of philosophy. But Darwin was not the first biologist to enunciate doctrines with wider implications, and the entanglements of biology and architectural thought have a history that goes back a century further, to Buffon and Linnaeus as Professor Collins shows in the article below.*

The purpose of analogy is to familiarize us with new ideas by linking them to ideas we already understand. It is not uncommon, however, for new theories to be linked analogously to ideas which are hardly understood by anyone, but which have captured the popular imagination by their progressive appeal. Perhaps also the less an audience understands of a subject used as an analogy, the more impressive does the argument appear. This results, if I may fall into the same trap myself, from some kind of osmosis of profundity. People today talk glibly of 'chain reactions' as if the principles of nuclear physics were obvious to anyone. A century ago, the favourite words were 'germ' and 'evolution.' Now that we are celebrating the centenary of the publication of *The Origin of Species*, it may be useful to examine the influence of biological analogies on architectural theory, and try to assess their usefulness with respect to the architecture of our own day.

The origins of the biological analogy, like so many ideas which have influenced modern architectural doctrines, can be traced to about the year 1750. At that time, two epoch-making scientific books were published: Linnaeus's *Species Plantarum* (1753), in which the entire vegetable kingdom was classified binominally according to the disposition of the female reproductive organs, or 'styles,' and Buffon's *Histoire Naturelle* (1749), a vast compendium which attempted to incorporate all biological phenomena into a general interpretation of the laws governing the universe. Linnaeus's work does not immediately concern this present inquiry. Buffon, however, is of considerable relevance, since he disagreed both with Linnaeus's immutable species, and with his whole doctrine of classification by arbitrarily chosen characteristics. On the contrary, he believed that this kind of compilation obscured the fact that all species must have derived from a single type, and, supporting his views on this subject both by the evidence of fossil shells, and by reference to mammoths recently discovered in Siberia he put forward a philosophy of creation in which the idea of evolution was expressed clearly for the first time.

In so far as his system relates to biological ideas used later by architectural theorists, there are two features which deserve mention. The first is that, in hitting upon the idea of evolution, he saw it as essentially a process of degeneration, not of improvement, since his religious beliefs (or his respect for those held by his contemporaries) prevented him from assigning the evolutionary process to any but the lower animals. On the other hand he was the first scientist to distinguish correctly between the 'vegetative' and specifically 'animal' parts of animals, whereby an animal may be regarded simply as a vegetable organism endowed with the power of moving from place to place. Thus 'organic life' has come to mean, for architectural theorists at least, the sum of the functions of the 'vegetative' class, for all living organisms, whether plants or animals, possess them to a more or less marked degree.

The scientist who first gave classical expression to this meaning of 'organic' was Xavier Bichat, whose *Physiological Researches on Life and Death* was published in 1800. Until then it was normal, especially in view of the humanistic culture of the age, for the biological analogy to refer to animals rather than plants. Lord Kames, for example, who disliked symmetry in gardens, contended nevertheless that 'in organized bodies comprehended under one view, nature studies regularity, which for the same reason, ought to be studied in architecture.' At the beginning of the nineteenth century, however, 'organic' came to be regarded less as a quality of 'life which moves'. It was thus the asymmetry of plants and viscera, rather than the symmetry of animal skeletons, which came to be accepted as characteristic of organic structures, whereby biology could still be adduced to support the architectural fashions of the age.

The most important enunciations of evolutionary theory at this time were those published by Lamarck. Lamarck was essentially a botanist of the school of Buffon, but when, at the age of fifty, he was appointed professor of Zoology by the

National Convention without any previous experience at all, he was obliged to transfer his attention to the study of anatomy. As a result of this combination of disciplines, he was eventually led to conclude that living forms had not evolved retrogressively as Buffon had believed, but progressively. This change of attitude was only to be expected. Buffon, living in the age of Rousseau, and at a time when the Book of Genesis was literally accepted, naturally favoured a hypothesis implying a Fall from perfection. Lamarck, in the age of Revolution, and at a time when the idea of Progress was literally accepted, naturally favoured a contrary view.

Similarly, it was not entirely strange that Lamarck should suggest that evolution was due to environment. The importance of this influence on art, law and society had already been emphasized by Winckelmann, Montesquieu and de Goguet respectively, although they did not, as far as I know, go so far as to say that it actually caused evolution direct. This, however, was the essence of Lamarck's revolutionary argument. 'It is not,' he wrote, 'the organs—that is to say, the form and character of the animal's bodily parts—which have given rise to its habits and peculiar properties, but, on the contrary, it is its habits and manner of life and the conditions in which its ancestors lived that has in the course of time fashioned its bodily form, its organs and its qualities.'

The word 'biology,' or science of life, was invented by Lamarck in about 1800; at the same time, the word 'morphology,' or science of form, was invented by Goethe, who in his own day was as famous as a scientist as he was as a poet. Being a poet, however, he understood the term morphology in a much wider sense than we do today (when the subjects of its study are confined to the comparison and relationships of living structures and their development), and included non-living forms such as rocks. This, as we shall see, was to be another element of confusion in the biological analogy in that, from its inception, there was uncertainty as whether morphology was concerned with structures which live, or with structures which grow. Félix Vicq d'Azyr, for example, at the end of the eighteenth century, had rejected the old comparison between the growth of organisms and the growth of crystals, contending that crystals are mathematically regular in shape and homogeneous in structure, whereas organisms are of rounded shapes and complex composition. On the other hand Jacob Schleiden, fifty years later, considered that life was nothing more or less than a 'form-building force,' and he considered the growth of crystals and organisms to belong to the same category of phenomena. As late as 1898, Herbert Spencer could still assert that the growth of crystals and organisms was 'an essentially similar process.' Since it was Spencer's biological works which mainly influenced Frank Lloyd Wright, the possible effects of this ambiguity will be obvious.

Moreover, as soon as the new science of morphology was established, and pursued methodically by the study of comparative anatomy, two dilemmas in the interpretation of the facts at once made themselves apparent: does form follow function, or does function follow form? To the layman, the conundrum might appear futile and insoluble, but to those familiar with the history of modern architectural theories its importance will need no justification. Amongst biologists, the distinction was considered sufficiently important to perpetuate a bitter quarrel for half a century, the leader of the 'form follows function' school being Georges Cuvier, the leader of the opposing faction being Geoffroy Saint-Hilaire. Cuvier (who was incidentally a friend of the architect A. T. Brogniart, and obtained his assistance in examining fossilized building stones) stated that every modification of a function entailed the modification of an organ. Geoffroy Saint-Hilaire protested against arguing from function to structure as an 'abuse of final causes.' The controversy might well have continued indefinitely had it not been that advances in cell-theory distracted attention from morphology, by causing organisms to be seen no longer as cleverly constructed mechanisms but simply as an aggregate of cells.

In the event, when the biological analogy was first seriously applied to art theory, the delicate topic of 'form versus function' was avoided completely, since interest was concentrated on the way forms grow, rather than on the way they work. From the time aesthetics became associated with psychology in the middle of the eighteenth century, philosophers had been trying to explain how inspiration (or 'genius' as it was sometimes called) grew in the human mind. Buffon himself, in his speech on *Style* to the Academie Française (1753) was perhaps the first to hint at a biological analogy when he remarked that 'the human mind can create nothing, and only produces after having been fertilized by experience and meditation, in that its perceptions are the germs of its products.' Later Young, in his *Conjectures on Original Composition* (1759), stated that 'an original may be said to be of a vegetable nature; it rises spontaneously from the vital root of genius; it grows, it is not made.' But it was left to Samuel Taylor Coleridge to express the idea as a complete artistic theory.

There seems little doubt that Coleridge derived his ideas from Germany, where he had studied in his youth and where such ideas had long been in circulation. Young's *Conjectures*, though virtually ignored in England, had been twice translated into German within two years of its publication, and had become an important part of the gospel of Storm and Stress. J. G. Herder, in his essay *On the Knowing and Feeling of the Human Soul* (1778), had used plants as an analogy for the development of art forms from the soil of their own time and place. Goethe, in his famous early essay on German architecture, had described Gothic as the organic product of growth in the mind of genius. But Coleridge, who was himself an amateur biologist, not merely translated these views into English; he organized the attack against the whole 'Mechanico-Corpuscular' philosophy of creation. 'The form is mechanic,' he wrote, 'when on any given material we impress a predetermined form, as when to a mass of wet clay we give whatever shape we wish it to retain when hardened. The organic form, on the other hand, is innate, it shapes as it develops itself from within, and the fullness of its development is one and the same with the perfection of its outward form.'

Several criticisms relevant to the present enquiry may be made concerning Coleridge's views. One is that the process of artistic creation is explained by him as virtually an unwilled and unconscious process of mind. The second is that however violently he might attack the 'mechanical' theory, it has been frequently used by biologists to explain how living organisms actually work. It was not only early philosophers such as Descartes who regarded the animal body as a machine. One of the most famous of Cuvier's disciples, Henri Milne-Edwards, stated that he had 'tried to grasp the manner in which organic forms might have been invented by comparing and studying living things as if they were machines created by the industry of man.' Finally, it is worth noting that no explanation of morphological development was more mechanistic than Darwin's 'Natural Selection.'

It has already been pointed out that by 1859 there was nothing novel in the idea of evolution as applied to the theory of life, even though the term 'evolution' was not used in this sense until 1831. This is equally true with regard to the theory of architecture. The classical architects of the early eighteenth century believed implicitly in evolution, since they believed that the moderns had improved on the Romans, just as the Romans improved on the Greeks. Even mid-nineteenth-century writers on architecture such as Fergusson, who specifically criticized Lamarck's

theories, believed in architectural evolution because they believed in Progress. For biologists the novelty of Darwin's theory was that it attributed evolution to a selection of *existing* forms (or, to put it another way, the elimination of obsolescent forms) by Nature herself. It thus inevitably weighed the balance in favour of the 'function follows form' school by presupposing that the forms existed in the first place. Lamarck had claimed that a change in environment actually modifies the form of animals, and that these changes are transmitted by heredity. Darwin claimed, on the contrary, that the changes were arbitrary and accidental, and that species changed only because the unfunctional forms never survived. He compared the action of natural selection to that of a man building a house from field-stones of various shapes. The shapes of these stones, he said, would be due to definite causes, but the uses to which the stones were put in the building would not be explicable by those causes. Yet as Charles Singer has pointed out, when a man builds a house, there is the intervention of a definite purpose, directed towards a fixed end and governed by a clearly conceived idea. 'The builder in the proper sense of the word *selects*. But the acts of selection—mental events in the builder's mind—have no relation to the "causes" which produced the stones. They cannot therefore be compared with the action of Natural Selection.' Architectural theorists who are guilty of similarly inexact analogies between building and botany may find consolation in the thought that a classic precedent was furnished by the Master himself.

If in fact we look at those phenomena which scientists consider as biological, we shall see that the number of exact parallels which can be drawn are slight. Vicq d'Azyr classified organic functions into nine categories: digestion, nutrition, circulation, respiration, secretion, ossification, generation, irritability and sensibility, and of these only circulation would seem to have any analogy with the function of buildings. Similarly, if we examine morphological systems of classification, whether it be the Linnaean system (based on one selected feature), Cuvier's system (based on total structure related to inner parts), or the system of von Baer (based on what he called the 'spatial relationship' of organic elements, i.e. radial, longitudinal, massive and vertebrate), there seems little even remotely suggestive of buildings and the way they are designed. It would seem as if the analogy must always be general and poetic, and in fact the features held in common seem limited to four: the relationship of organisms to their environment, the correlation between organs, the relationship of form to function, and the principle of vitality itself.

The most comprehensible analogy concerns the influence of environment on design, an idea which undoubtedly derived its main stimulus from Darwin, although it first emerged in the work of Alexander von Humboldt, who opposed the academic methods of Linnaeus and suggested that plants should be classified according to the climates in which they were found, rather than according to inherent characters determinable in a museum. Being of a romantic and aesthetic disposition, he sought a system of classification through the impression made by landscapes when simply looked at by the ordinary observer. He was very interested in architecture and described in detail the pre-Columbian buildings he found in Central America. He nowhere seems to have suggested, however, that the design of buildings had much relationship with topography and vegetation, although he thought that pyramids were best suited to mountainous ground. Only in the sphere of engineering did he exert any influence on construction, in that his description of Peruvian suspension bridges is known to have suggested modern experiments in this field.

Darwin naturally took von Humboldt's doctrine considerably further by contending that Nature had *selected* those forms which were most suitable for the environments in which they were situated, but he offered no suggestion as to how Nature created such forms in the first place. He had in fact no training and probably little interest in pure morphology, and in so far as his work affected morphological studies, it was to cause the public to regard organisms *historically*. In his first draft of *The Origin of Species*, written in 1842, he remarked that 'we must look at every complicated mechanism and instinct as the summary of a long history of useful contrivances much like a work of art.' Whether or not he actually regarded the history of architecture as analogous with natural selection, I do not know. But there can be little doubt that, so far as his biological theory of the relationship of form to environment is concerned, the relevance of Darwinism to architecture has tended to decrease. Improvements in air-conditioning equipment are making architectural form increasingly independent of climatic considerations. Only in districts where distinctive local materials can be used for domestic architecture is there any likelihood of regional characteristics influencing form, and even in newly developed areas where the example has been set, such as Arizona, there seems little evidence of a desire to carry the movement very far.

As regards the 'correlation between organs' (which one might perhaps compare with the relationship between the parts of a building), the fact was first enunciated as a biological principle by Vicq d'Azyr, who pointed out that a certain shape of tooth presupposes a certain type of structure in the extremities and the digestive canal, because the animal's bodily parts are adapted to its way of living. This idea was taken even further by Cuvier, who, from small fossil fragments, showed how one could reconstruct extinct animals by a sequence of deductions based on the interdependence of each organic part. Yet in so far as this discovery relates to architectural theory, it suggests merely a curious parallel with the Renaissance theory of modular proportions, whereby, as the Humanists had observed, the proportions of the human body are so standardized that if one were to find the finger of an antique statue, it would be possible, theoretically, to reconstruct the whole (a fact enthusiastically seized upon by the great forgers of the age). However, the only use to which Cuvier's discovery was put by nineteenth-century theorists was in proving that the 'imitation of styles' was morally wrong, since it left false evidence for future historians. After describing zoological reconstructions of prehistoric animals in his *True Principles of Beauty in Art* (1849), Fergusson added: 'With the same facility with which a fossil impress or a bone does this for the geologist, does any true style of art enable the archaeologist to tell from a few fragments in what century the building to which it belonged was erected.'

In general, the only major biological fact which seems directly analogous to modern architecture concerns the relationship of form to function, but as we have seen, the theory that form follows function was hotly contested by those who believed that function follows form. It is curious to note that this dilemma was specifically pointed out by Herbert Spencer, from whose writings (so Frank Lloyd Wright tells us) Louis Sullivan derived many, if not all, his biological ideas. However, since nobody has ever denied the obvious fact that form and function are in some way related, it is worth considering how this relationship does fit in with a theory of design.

In case it should be objected that such a topic is not part of the 'Organic' theory at all, but of the 'Functional' theory, it is opportune to suggest that whereas in the functional analogy, the relationship between form and function is considered as necessary to *beauty*, in the biological analogy, it is considered as necessary to *life*. Historians are generally agreed that credit for this new interpretation must

be given, as far as architectural theory is concerned, to Louis Sullivan, although it may be noted that he never expressed it or applied it until after he had met Wright. It had been foreshadowed by Greenough and Baudelaire, who, perhaps with von Humboldt in mind, suggested that the best critics were those who had travelled alone through forests and prairies, contemplating, dissecting and writing. 'They know,' he wrote, 'the admirable, inevitable relationship between form and function.' Similarly, Viollet-le-Duc, like Ruskin before him, drew attention to the way mediaeval sculptors had studied the morphology of vegetation, and how they understood that the contours of plants 'always express a function, or submit themselves to the necessities of the organisms.' He did not, however, draw any major philosophical conclusions from this observation, except to say that the masons 'sought to bring out in the structures of their buildings those qualities they found in vegetation.' The French Rationalists were in fact more interested in the idea that form follows structure (which they found quite intelligible without the use of elaborate analogies), so that there can be little doubt that it was Sullivan who first made biological analogies the foundation of a total architectural doctrine.

Sullivan seems to have derived little inspiration from Viollet-le-Duc's theories, since his main interest was in composition rather than in construction (which he left to Adler). Yet following the anti-academic fashion of his age, he objected to the term 'composition,' although in the circumstances it is difficult to see why. Since 'decomposition' is the chief characteristic of organisms which are dead, it might reasonably be inferred that 'composition' is the chief characteristic of organisms which are living. But, like so many theorists who have found the biological analogy stimulating, he never really pursued it very deeply, and made little distinction as to whether it referred to the object created or the process of design. Whilst some of his writings suggest a Lamarckian interpretation of evolution (as when he wrote that 'it was not simply a matter of form expressing function; the vital idea was that the function *created* or organized its form'), most of them suggest the Coleridgean analogy between biology and poetic vision. It is perhaps significant that his first enunciation of an architectural doctrine—the address on *Inspiration* given to the Western Association of Architects' Convention—was in the form of a long poem intelligible only to three other people in the room.

In the present century the biological analogy has been associated primarily with Frank Lloyd Wright, into whose young hands Sullivan enthusiastically transmitted his copy of Spencer's biological works. What Wright has meant by 'Organic Architecture' has never been clear; the difficulty is that for Wright it meant so much; crystalline plan forms, the possibility of growth by asymmetrical addition, the relationship of composition to site and client, the use of local materials, the individuality of every created thing, the need for every artist to endow his work with the integrity of his innermost being, and so on. But primarily it meant for him a *living* architecture; an architecture in which useless forms were sloughed off as part of the process of a nation's growth, and in which every composition, every element and every detail was deliberately shaped for the job it had to perform. To this interpretation no one can take exception, and perhaps the safest thing to say of the Biological Analogy is that it is simply a more poetic expression of the ideal of *L'Architecture Vivante*.

It is now a century since the *Revue Générale de l'Architecture* launched the slogan 'Organic Architecture' in this sense, although at the time it proved premature. 'We have named it Organic,' wrote the editor in 1863*, 'because it is, in relationship to the Historic and Eclectic Schools, what the organized life of animals and vegetables is in relationship to the unorganized existence of the rocks which form the substratum of the world.' Since then, many developments have occurred in biological theory, and many in architectural practice. Occasionally some of the former can be paralleled with some of the latter. Claude Bernard's discoveries concerning the way the body adapts itself to changing conditions (or vaso-motor mechanism) suggest clear parallels with the flexibility of modern planning. Similarly Milne-Edwards's law of economy, which states that nature does not always create a new organ for a new function, but often adapts undifferentiated parts to special functions, or even converts to other uses organs already specialized, suggests many interesting parallels in this present age of standardized forms. Most important of all, Wilhelm Roux's discovery that the blood-vascular system is largely determined by direct adaptation to functional requirements demonstrates that form does occasionally follow function after all. But in general, detailed analogies are as dangerous now as when the slogan was first formulated, and apart from holding that architecture must be a living art, we cannot go much deeper into the mystery of life than when *The Origin of Species* was first given to an astonished and excited world.

Within the last few years, however, one surprising change has occurred in the philosophy of architecture which provides a curiously apposite termination to a study of the influence of Darwin. The nineteenth century's naïve faith in evolutionary progress is now being seriously challenged, and a suspicion has arisen that Buffon's approach may not have been entirely wrong. This does not of course mean that optimism has given place to pessimism, but simply that we no longer accept, like the followers of Darwin, the idea that every change is for the best. Recently however it has become clear, in both Europe and America, that the leading architectural periodicals are no longer content merely to divide all new buildings into the two categories: 'evolutionary' and 'vestigial,' and leave it at that; they are subjecting contemporary architecture to systematic criticism in order to determine how improvements can best be brought about.

This, of course, is the very opposite of natural selection, but it has become necessary because we can no longer afford to regard every new 'contemporary' building as automatically an advance on the rest. In the early years of the International Style, there was much to be said for accepting every manifestation of the new spirit uncritically, since premature disparagement might have stunted its early growth. Today, when the functional forms evolved by the leading modern architects are so widely accepted, there is obvious danger of their misuse, and nothing can better serve the advancement of architecture than that examples of this should be publicly singled out.

An even more cogent reason for the new critical attitude is that, just as biologists have become very conscious of 'biotic' environment (i.e. the influence of free organisms on each other), so we are becoming much more aware that 'environment' does not only comprise natural scenery, but also the accumulated legacy of the buildings in our towns. The urban scene, especially in America, is in many districts predominantly 'contemporary,' so that modern architecture has no longer an excuse for ignoring its neighbours. On the other hand, with the general acceptance of functionalism, there is no need to perpetuate the early revolutionaries' aggressive disdain for the so-called 'beaux-arts' styles. Such buildings, when juxtaposed against our own, bear gratifying testimony to the victory of the fittest, but they also carry the awful warning that, in architecture, it is not necessarily only the Fittest which Survive.

* The earliest use I have found of the word 'organic' with specific reference to a 'living' architecture occurs in Lamennais' beautiful eulogy of Gothic buildings in *De l'Art et du Beau* (1841): 'Ce qui les caractérise, c'est le travail organique qui de tant d'éléments divers a fait une seule forme, dont les innombrables parties . . . se fondent en un corps unique et vivant'.

1, air view, showing the new library alongside the old university buildings. The old library is the detached octagonal building in the bottom left-hand corner.

UNIVERSITY LIBRARY, SHEFFIELD

ARCHITECTS	***GOLLINS, MELVIN, WARD AND PARTNERS***
assistant architects	***M. Litchfield, B. J. Mayes, H. Prime***

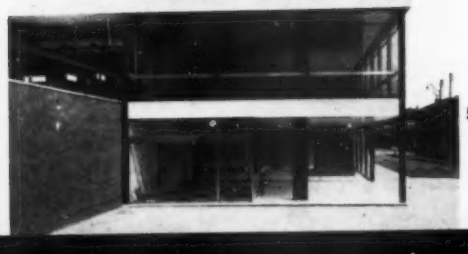
2

2, from the east, looking towards the corner on which the main entrance is situated.

3

UNIVERSITY LIBRARY, SHEFFIELD

4



5

6

3. a section of the north-east façade, facing the future campus. On the left is the entrance vestibule. Through the glass wall can also be seen the main staircase and the mezzanine floor.
4. looking along the south-east façade, across the mezzanine-level terrace that separates the library from the old university buildings.
5. the main entrance. On the left is the retaining-wall of the terrace shown above.
6. terrace and library from the east. The upper floor, above book-stack level, contains the main and subsidiary reading rooms.

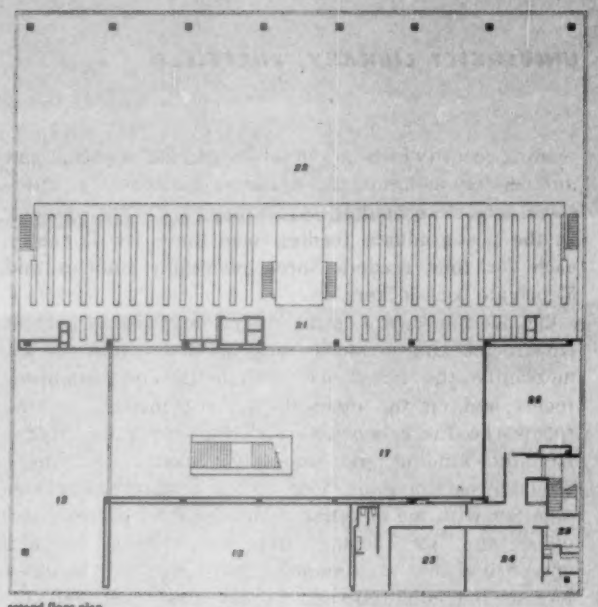
The library is the first to be completed of the group of buildings which was the subject of an open competition, held in 1953, for the development of the central area of Sheffield university. The site is a corner of Weston Park, which the City Corporation made available for the University; it lies immediately north-east of the existing university buildings. There is a steep fall from west to east.

The form of the library is a low square, 155ft. along each side, 52ft. high on the east or campus side and 32ft. high on the west or park side. This allows it to

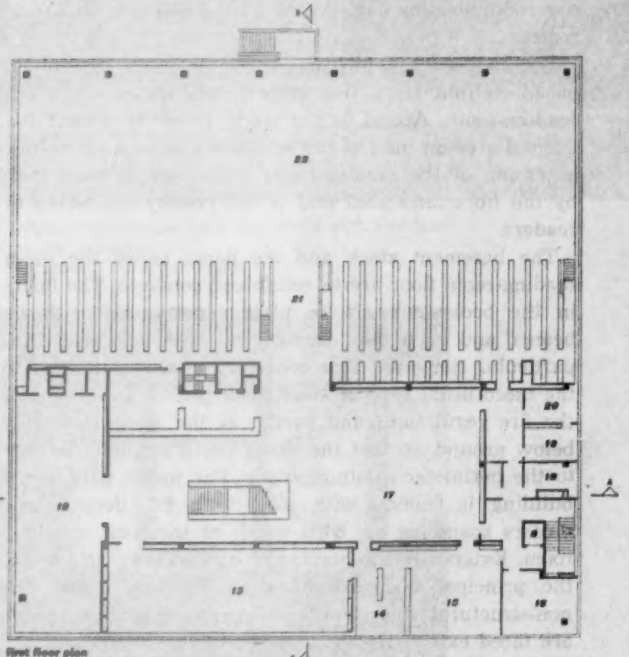
7, revised redevelopment scheme for the Western Bank area of the university, of which the library (centre top) is the first instalment. Alongside it is the 16-storey Arts tower, starting next year.

act as a foil to the 16-storey Arts block on which constructional work is to start early in 1961, and to the long low chemistry block which forms the east boundary of the campus. This is already under construction.

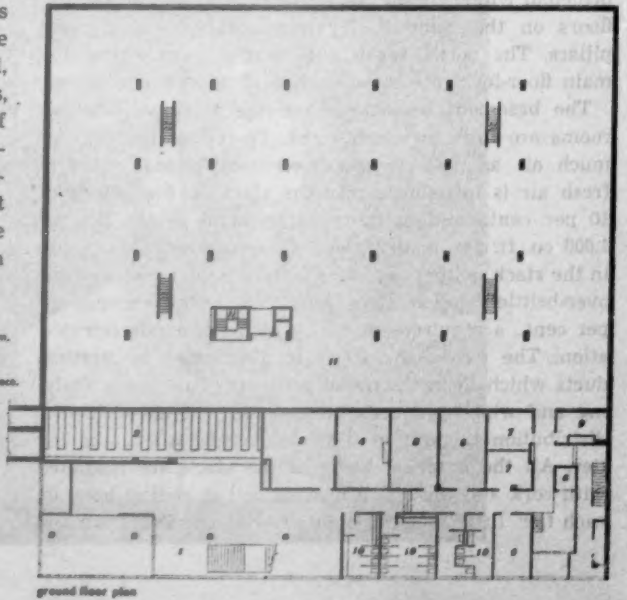
To ensure that no books can be taken away without the issue of a voucher, the plan is divided into two parts: the rooms within, and those outside, the entrance and exit turnstiles. Within the control lie all the rooms to which readers normally have access. They are approached from the centrally placed catalogue-hall, in which are the card-index catalogue cabinets, shelving for bibliographical and standard books of reference and the combined issue-desk and voucher-counter. Also within the control lie the main reading-room and the two smaller reading-rooms for post graduates and current periodicals, access to all three being from the catalogue-hall. At the back of the main



second floor plan



first floor plan



ground floor plan

key
1. entrance hall.
2. cloakroom.
3. processing room.
4. dark room.
5. stationery store.
6. strong room.
7. cleaners.
8. lift.
9. mess room.
10. lavatory.
11. book stack.
12. post-graduate reading room.
13. periodicals reading room.
14. binding and unpacking.
15. cataloguing.
16. labelling.
17. catalogue hall.
18. inter-library loans office.
19. deputy librarian.
20. secretary.
21. reading room book store.
22. reading room.
23. female staff common room.
24. male staff common room.
25. kitchen.
26. air-conditioning plant.
27. mezzanine exhibition space.
28. pamphlet room.
29. thesis room.

Between ground and first floor, in the front part of the building not occupied by the tiers of book-stacks, there is also a mezzanine floor (see sections overleaf) through which the main staircase rises. This provides exhibition space and at the same level is the librarian's office.

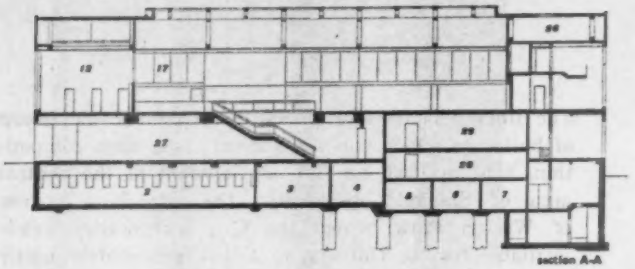
reading-room (which has 76 tables and 280 readers), and immediately alongside the entrance, is a two-tiered open-stack book-store holding approximately 130,000 volumes. In the post-graduate reading-room there are 12 tables, each for four readers, three microfilm cubicles and 55 private book-lockers.

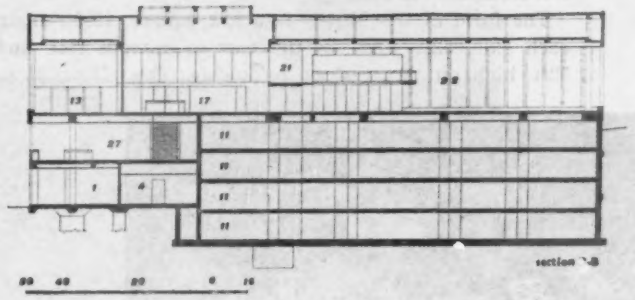
Outside the control on the ground floor are the student cloakrooms and lavatories and service rooms, on the mezzanine the librarian's, secretaries' and committee rooms and on the main floor the principal working rooms: i.e. the cataloguing and new acquisition rooms, and the binding and unpacking rooms, etc. These, although on the same floor as the reading-rooms, can, together with the labelling room, the inter-library loans office and the deputy librarian's office, be also approached by a secondary non-controlled staircase having immediate access to the goods lift and the covered unloading bay. On the second floor are staff rest-rooms.

The book-stack, which has accommodation for 870 000 books on four tiers, lies immediately under the main reading-room. Access to the stack, however, except for a small area on the top tier which is available for future extension of the reading-room book-store, is used only by the librarian's staff and is not readily accessible to readers.

The basement stack and the floors below the main reading-room floor are in reinforced concrete. The floors in the book-stack are in plate construction with no beams, and each floor carries the bookshelves of that particular tier only. This construction was preferred to the more usual type of steel stack partly on account of the fire regulations and partly, as the stack is largely below ground, so that the floors could act as buttresses to the perimeter retaining-walls. The upper part of the building is framed with steel with 8ft. deep lattice girders spanning the 80ft. width of the main reading-room. Externally the horizontal bands above and below the principal floor are faced in Portland stone. The non-structural steel mullions forming the window-wall are faced externally with black-painted aluminium. The principal window-mullions to the ground and mezzanine floors on the campus elevation are box-section steel pillars. The north, south and west facades below the main floor-level are faced with dark blue-brown bricks.

The basement book-stack and the principal reading-rooms are fully air-conditioned. To reduce the cost, as much air as possible has been recirculated, although fresh air is introduced into the stack to the extent of 10 per cent., and in the reading-rooms at the rate of 1,000 cu. ft. per reader place. To ensure that the books in the stack neither deteriorate from mildew nor become over-brittle, the relative humidity never exceeds 65 per cent., a requirement which alone demands refrigeration. The air in the stack is distributed by vertical ducts which form the metal uprights of the book shelving and which are connected to the main horizontal distribution ducting in the false ceiling above the top tier. All the external walls of the stack are insulated with cork and there is a heating coil at ceiling level on each tier. In the reading-room, to reduce solar glare and

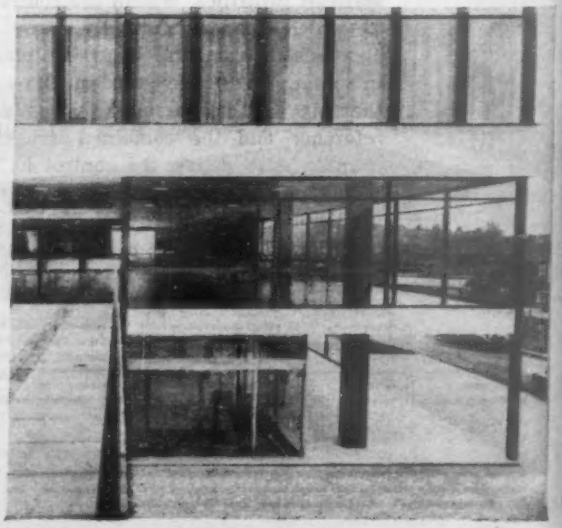




key
1. entrance hall.
2. cloakroom.
3. processing room.
4. dark room.
5. stationary store.
6. strong room.
7. cleaners.
8. lift.
9. mess room.
10. lavatory.
11. book stack.
12. post-graduate reading room.
13. periodicals reading room.
14. binding and unpacking.
15. cataloguing.
16. labelling.
17. catalogue hall.
18. inter-library loans office.
19. deputy librarian.
20. secretary.
21. reading room book store.
22. reading room.
23. female staff common room.
24. male staff common room.
25. kitchen.
26. air-conditioning plant.
27. mezzanine exhibition space.
28. pamphlet room.
29. thesis room.

to reduce the demand on the refrigeration plant, windows facing south and west are glazed with double anti-sun panels. All rooms which have air-conditioning have fixed windows and only those relying solely on radiators and convectors have opening lights. The ceilings of the reading rooms are of pierced aluminium panels which are clipped to the heating coils, above which is a layer of insulating and sound absorbent material.

Lighting in the reading-rooms is by flush fluorescent fittings which can be lowered to allow ease of replacement. The catalogue-hall has an overall corrugated plastic translucent laylight, above which are fluorescent lights at high level.



8, the entrance corner, showing the mezzanine floor inserted below the main library floor, alongside the upper tier of book-stacks.

9

9, close-up of the main entrance (edge of mezzanine floor-slab faced with Portland stone; vestibule lined with Piastraccia marble).
10, looking through the entrance façade, lit up at night.

10

11

12

UNIVERSITY LIBRARY, SHEFFIELD

The reading room. 11 and 12, exterior by day and night (at this side of the building, facing Weston Park, the first floor is only a little above ground level).
13, interior. On the right is the balcony containing open-access bookshelves beneath which the reading room is reached.

13

14

15

16

14, one of the staircases leading up to the book-store balcony (see facing page).
15, looking into the main reading-room beneath the same balcony.
16, the post-graduate reading-room, occupying the south-east side of the first floor. All reading-rooms have floors of grey linoleum.

17

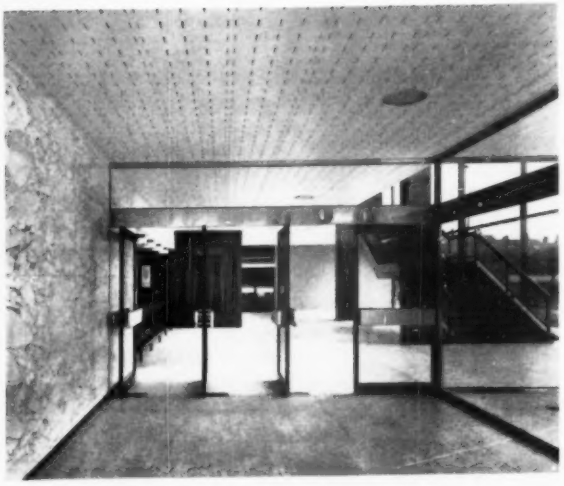
18

17, one of the staircases leading down to the successive levels of the book-stack.
18, inside a typical book-stack. These are in four tiers, occupying the whole of the south-western half of the building below the reading-room level.
19, the standard table and chairs used in all the reading rooms. They have a metal frame and the table top and chair seats are covered with black imitation leather; the chair backs are of tola.

19

20

21, 22



23, 24

UNIVERSITY LIBRARY, SHEFFIELD

20. the catalogue hall on the main reading-room floor. The catalogue cabinets are at the far end, the entrance to the reading-room beneath the book-store balcony (see 13, 14, 15) is on the left beyond the library counter, and the staircase leading up from the mezzanine floor in the centre. The wall on the right, separating the hall from the periodical reading room, is faced with Danish maple.

21. the main staircase at mezzanine floor level. It has laminated wood treads on cased steel bearers. The balustrade is metal with glass panels, the handrail mahogany.

22. looking past the foot of the staircase towards the main entrance, showing also the mezzanine floor. The floor is travertine. The columns are faced with aluminium with a black sprayed cellulose finish.

23. cloakroom in ground-floor entrance-hall. The far wall is faced with Macassar ebony.

24. looking into the entrance-hall from the vestibule: on the left the cloak-room seen in 23; on the right the foot of the main stair.

James Gowan

CURRICULUM

The continuing debate on architectural education has just received an important official contribution in the publication of the report of the RIBA committee to consider the recommendations of the Oxford Conference of 1958. *The report, like many official documents of its kind, is chiefly concerned with the educational standards of those who enter architectural education, and the professional standing of those who emerge from it. But what of the educational process itself? In his article below, James Gowan—who as student and teacher has experienced most of the current educational techniques—approaches architectural education from the entirely different standpoint of asking what aspects of architecture can reasonably be taught in schools, and offers both a model curriculum that could be put into effect here and now, and illustrations of the kind of work it could be expected to produce in each year.*

Any discussion on architectural education today becomes immediately involved with Bauhaus principles. For over 20 years the progressive schools in this country and others have based themselves on Gropius's theories on architecture and study, and many continue to do so in the belief that the system has certain fundamental values which can survive indefinitely without adjustment. However it is evident that, in the more advanced schools, this is not the case and a large gap exists between what is taught and what is thought.

It is important to recall that the Bauhaus had two primary aims, both of which were accomplished. One was a reaction against the 'styles' and Beaux Arts academism. This initiated a teaching procedure based, fundamentally, on economic essentials; the decorative, the superfluous, the irrational, were eliminated. The second aim was to establish a particular kind of architecture which Gropius describes in 'we want to create a clear, organic architecture, whose inner logic will be radiant and naked, unencumbered by lying façades and trickeries; we want an architecture adapted to our world of machines, radios and fast cars, an architecture whose function is clearly recognizable in the relation of its forms.' The reaction predetermined, and the manifesto defined, an architectural style; the architecture of the Fagus factory and the administrative building at the Cologne Exposition. And teaching experiments in this country (the post-war school at Kingston-upon-Thames) have shown that similar teaching will produce a similar architectural style.

At the present time most schools are operating in an academic vacuum, that is, the students are developing privately and on their own initiative. The problem is, once again, to relate the content of teaching to a stated architectural aim. This will necessarily be retrospective and academic as a school can only

directly teach digested opinion and *indirectly* create an atmosphere which is concerned with anticipated and unrealized objectives.

It is becoming apparent that architecture, mainly due to economic pressures, is becoming multi-aesthetic; that is, not *one* style but a number of styles, each appropriate to the particular problem, are developing. For example:—

The 'house' is deeply rooted in *traditionalism* and, because of the wide variations of owner-requirements and limited finance, it is likely to remain so.

[*continued on page 323*

Two parallel streams of study form the skeleton of this model curriculum. First, the 'environmental'; this is concerned with the structure (social, cultural, etc.) of our communities. Second, the 'technical'; this is concerned with the physical means available to the architect.

The 'environmental' stream commences in 1st year with simple studies of human dimensions (design of furniture and basic equipment) and human activities (work studies and layout of rooms in the home) and ends with the design of a single-cell dwelling.

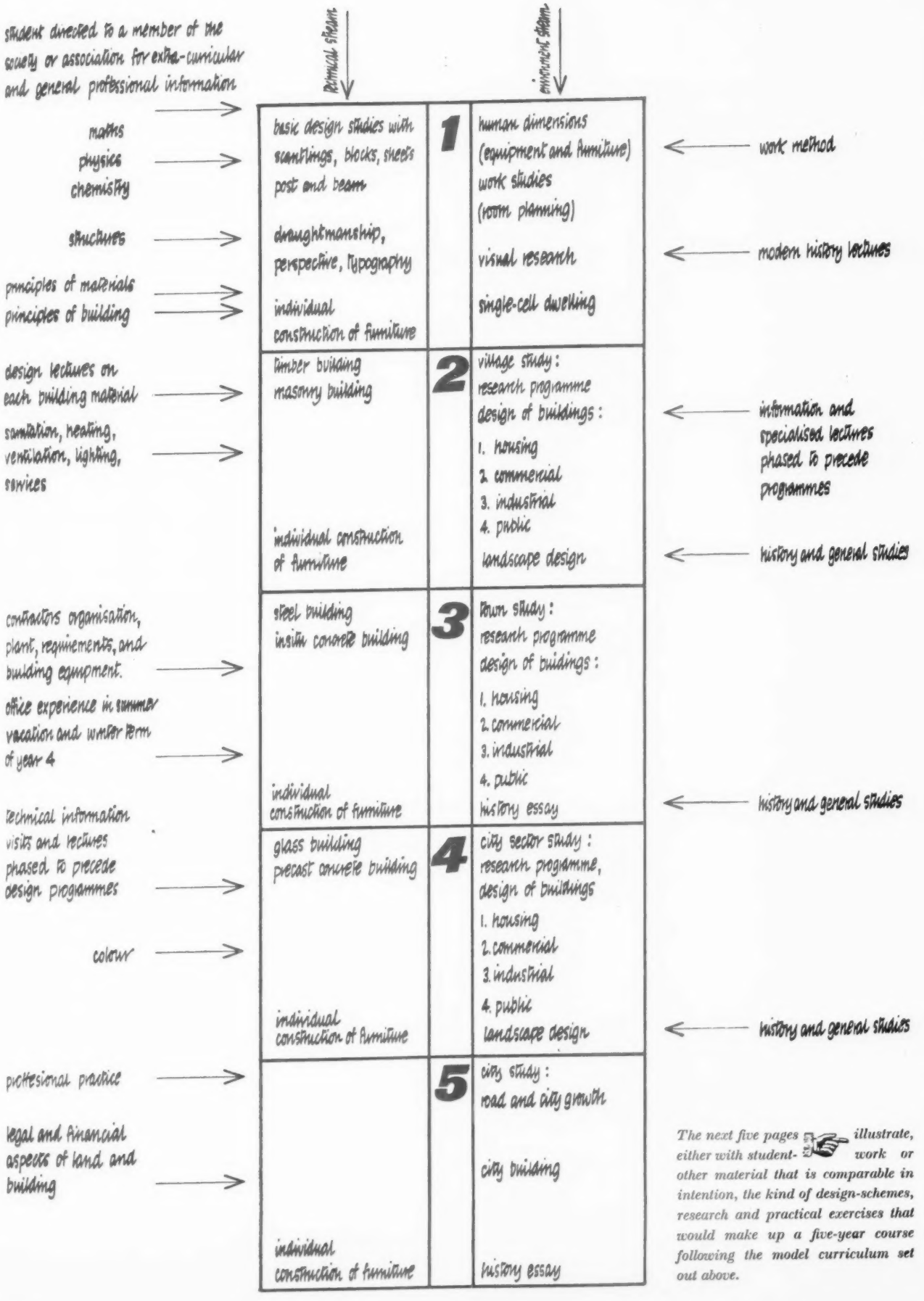
In year 2, the subject of study is a village, in which new building is taking place, and problems of relationship between new and old exist. Groups of 4-6 students carry out a visual investigation of the area, the primary concern being chiefly topographical at this stage; ground levels, position of trees, surface materials and the location and description of the principal buildings. This information is recorded for subsequent reference. Sites are then selected for a realistic programme of buildings which is as representative as possible; a house, a public building (village hall), a commercial building (shops) and an industrial building (workshop or garage). These are then carried to final design stage by individual effort.

Years 3, 4 and 5 follow the same pattern; a site research, development proposals, the design of housing and a typical range of public buildings. The town (year 3), the city sector (year 4) and the city (year 5) reiterate the problems but expand the scope of the enquiry and each are studied in a progressively more thorough and acute manner.

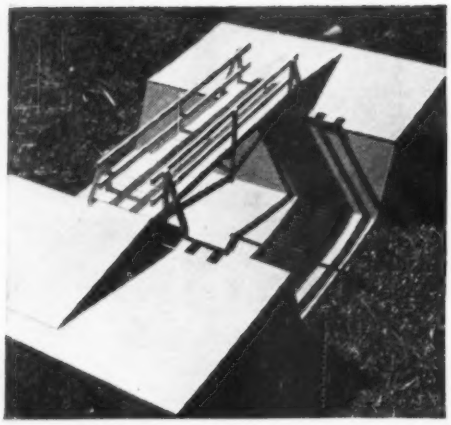
The 'technical' stream begins, in Year 1, with three studies using limited construction techniques. The elements are 1. linear (scantlings), 2. plane (sheet glass, plywood) and 3. solid (stone, concrete blocks) and the jointing technique to be used is stated. Simple problems, such as 1. small span bridge, 2. screen system in an enclosed space, display on screens, 3. garden shelter or walling layout, have a threefold use. They state a functional problem, they require three-dimensional consideration and they indicate that each type of element exerts its particular discipline. This work has to be based on accrued, empirical experience, as the technical lectures do not advance sufficiently until year 2. Then, until year 4, one design problem is undertaken with each of the materials; timber, masonry, steel, in situ concrete and precast concrete. The intention is to cultivate a greater degree of general competence and to concentrate attention on the limitations and the potentialities of basic building techniques.

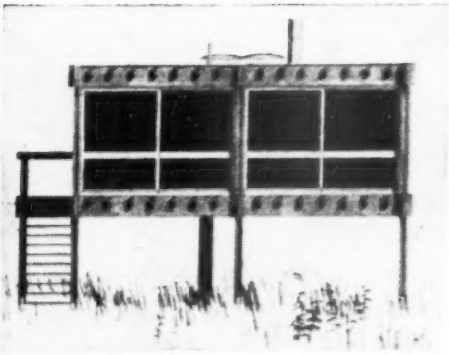
The two parallel streams are a fairly adaptable system, in an educational sense. The 'environmental' progression of individual . . . city provides a realistic basis for the general advisory lectures; sociological, legal, cultural, etc., and substitutions can be introduced into the sequence as more important problems arise. There is an argument, now, for studying suburban growth instead of the village and such a change could be made without disrupting the continuity.

The 'technical' stream has the same adaptability to change. With its design studies in particular building materials, it provides the spine into which the specialist technical lectures are introduced and the design studies themselves cultivate a need and a demand for technical information.



The next five pages illustrate, either with student-work or other material that is comparable in intention, the kind of design-schemes, research and practical exercises that would make up a five-year course following the model curriculum set out above.



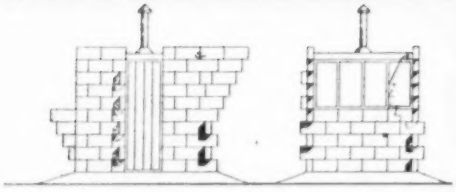


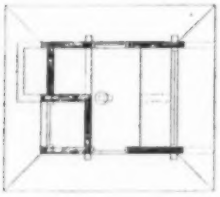
ISMUS IN HOLLAND

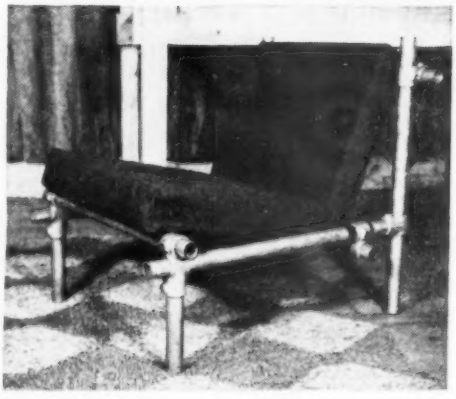
DADA

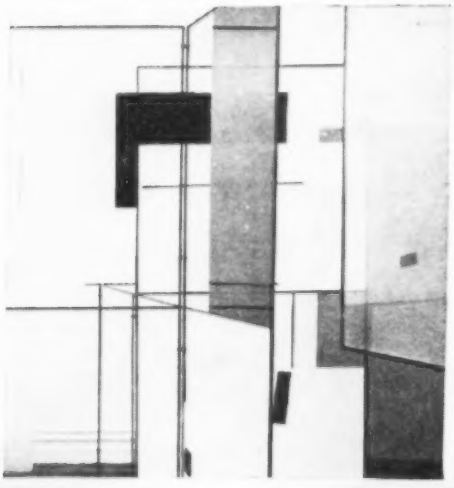
in Holland ist ein Novum. Nur ein Holländer, I. K. BONSET, ist Dadaist. (Er wohnt in Wien.) Und eine Holländerin, PETRO VAN DOESBURG, ist Dadaistin. (Sie wohnt in Weimar.) Ich kenne dann noch einen holländischen Pseudodadaisten, er ist aber kein Dadaist. Holland aber,

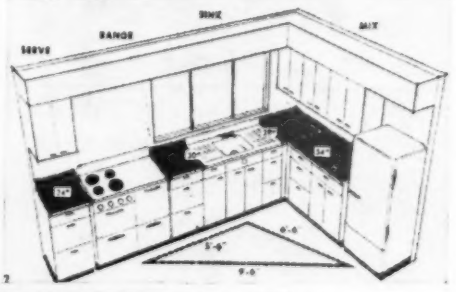
HOLLAND IST DADA

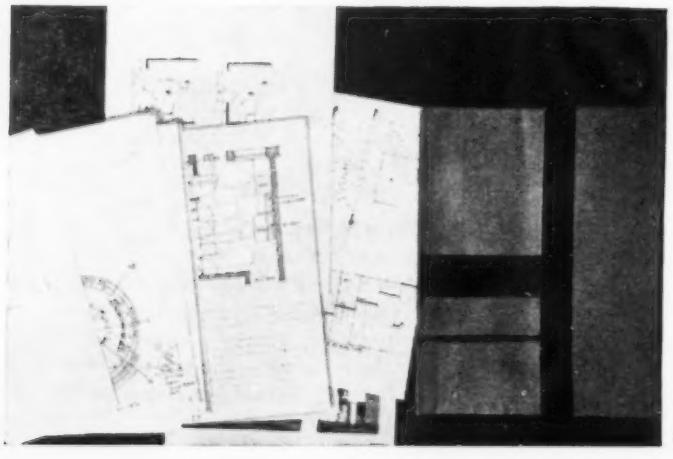












1 | 5
2 | 6
3 | 7
4 | 8
9

year 1

1, the timber bridge spans 20 ft. and uses one size of scantling throughout, 4 in. by 2 in. It is an exercise in simple triangulation in which the elements, the walkway, the handrail, and the structure are interrelated geometrically and are interdependent structurally.

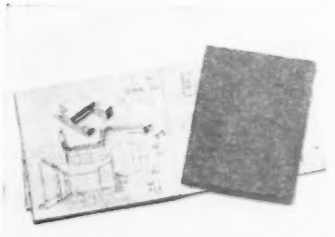
2, the garden hut, an exercise in concrete block construction, houses fuel, garden tools and a work bench. The walling, in one instance, is corbelled to incorporate eye-level shelving and, in the other, to form a fuel hopper. Transverse walls are articulated by projecting the bonding blocks.

3, demountable screen systems are one way of posing the problem of frames, joints and panels; the whole being structurally self-supporting. The scheme illustrated is not concerned with the problem of display (which is intended in the curriculum) and stresses the system itself.

4, 5, 8, 9, the subsequent studies are basic research leading to the design of a single cell dwelling, 5. This includes human dimensions, 9, furniture dimensions, study of kitchen use, 8, equipment layout and technical standards (space, light, ventilation, etc.), 4.

6, a section of Kurt Schwitters typography is included to symbolize these studies, which are to be included in the First Year course, and to act as a reminder that the bulk of contemporary typography has drifted a long way from its function of imparting information clearly and effectively.

7, during each year, as a practical exercise, the student makes a piece of furniture for his own use. He must devise, construct and test the object himself. The example illustrated is made of scaffolding, strip and foam rubber—and challenges you to like it.



The student should make, and accumulate, a series of notebooks which will give an overall picture of his five years' study.

year 2

10-14, *at its best, a second year scheme at village scale should be preceded by a particularly thorough, well-documented research. This scheme began with photographing the site, recording materials, colours, road surfaces, plant life, etc.; the concern being entirely with visual things. The artist's house and the village hall (which were the subject of the design studies) are sited in this village and the relationships with existing surroundings are clarified by a model.*

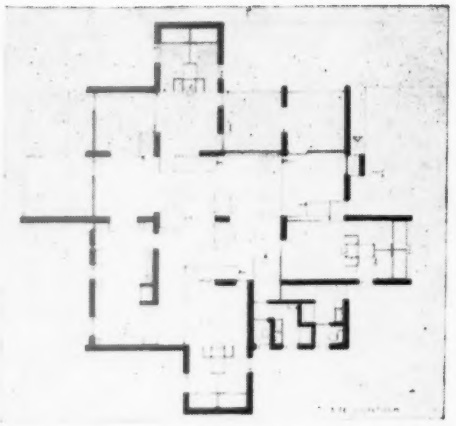
18, *the village hall is the timber study; built in posts, trusses and panels. The bolted, structural joints have been carefully considered and a positive, pleasant interior results.*

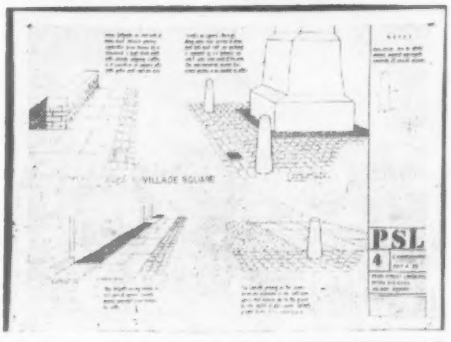
19, *a full dress perspective study, required as an exercise in this year, based upon the artist's house in Woodward's scheme.*

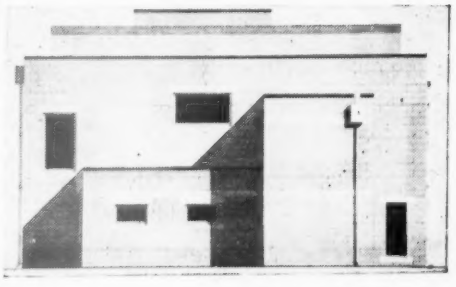
15, 16, *this brick building is a holiday camp arrangement, small rooms sharing central dining facilities, etc. This has produced a cellular, rather over-generous plan, but the brick is aptly used in a vertical, load-bearing manner. Practically, the building is neat and competent, but a contradiction is apparent between the formality of the original idea and the picturesqueness of the final result.*

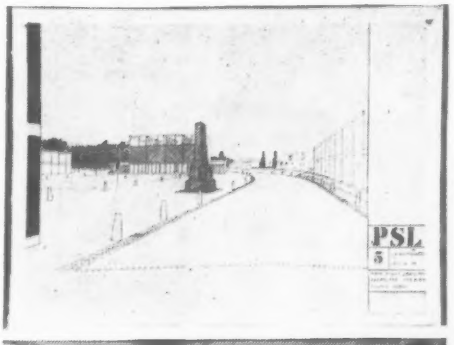
17, *the problems of deviations within the programme are exemplified by this block building, representative of a prevalent, minority point of view which sees architecture directly in an historical continuum and interprets this situation literally. The coping, lintols and string courses are applied without re-assessment or thought, to a contemporary problem such as is often set in schools, and the result is so far removed from function that it is virtually decoration. This is a boiler house (not a chapel) in concrete blocks (not stone) but—legalistically speaking—it answers to the letter of the programme, as set.*

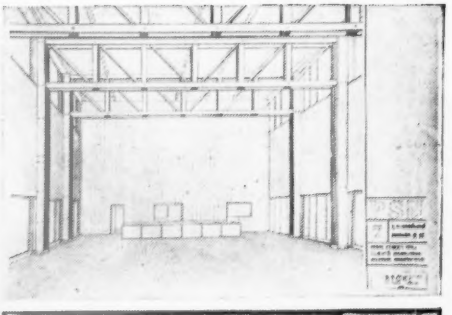
10 | 15
11 | 16
12 | 17
13 | 18
14 | 19

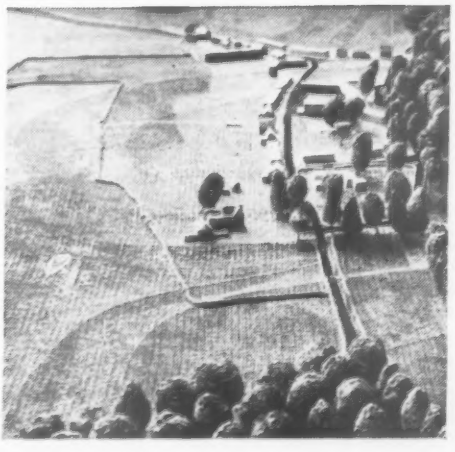




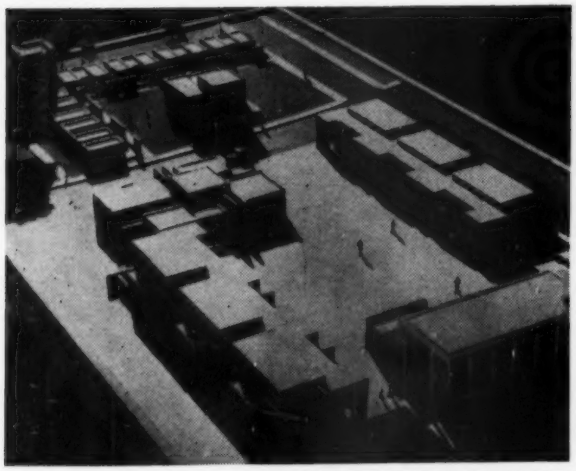


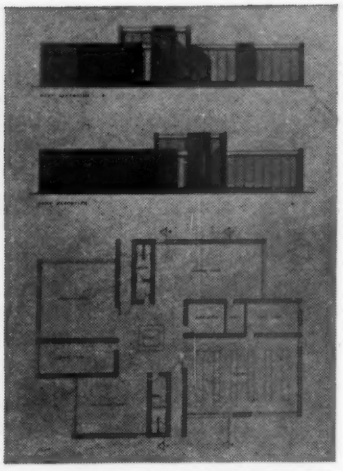


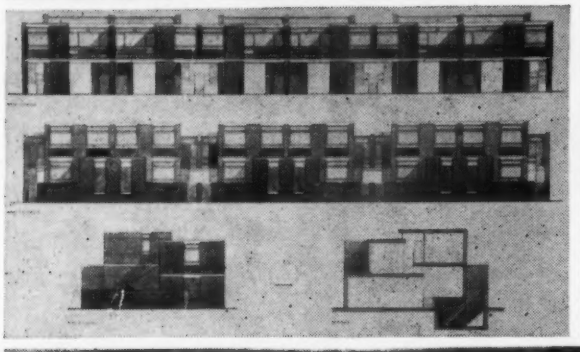


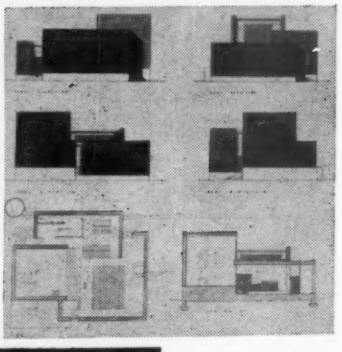


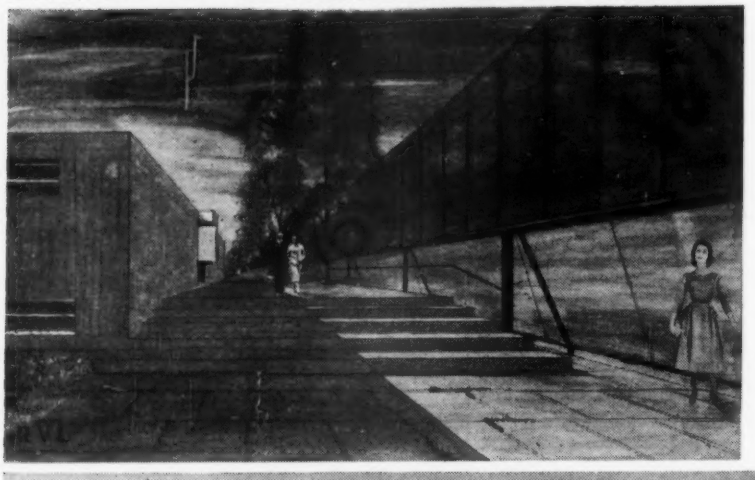
year 3

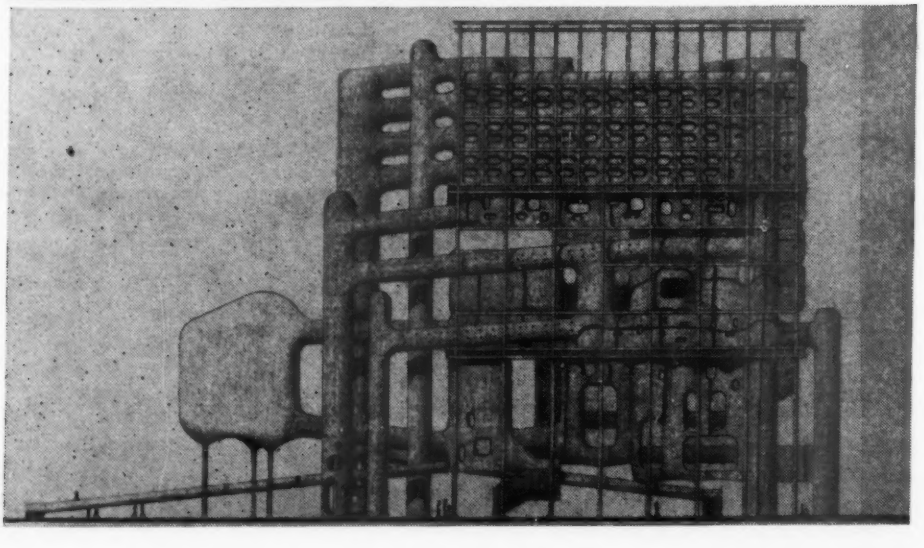












20 | 21
22 | 23
24
25

20, *a town centre, such as this, provides a good example of a small group of students working together and producing a unified result. Planning decisions were made together but the buildings were designed individually using agreed materials: blue brick, concrete and glass.*

21, *the library was one of the best things about this group of studies; the control has been given the key central position and round this the reading rooms rotate.*

22, *there is little system, however, about the stores which are sometimes solid, sometimes glazed once, sometimes twice; and the entrances seem unduly restricted. However, they harmonize with the other town-centre buildings in structure and style.*

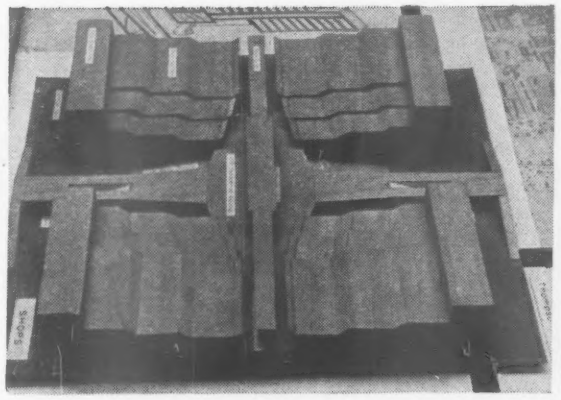
23, *the chapel (from the same study) is an exercise in three simple volumes and has an emphatic quality which is immediately appreciated. It is reminiscent of the* 1923 *house at Rotterdam by J. J. P. Oud—which is a pleasant enough thought.*

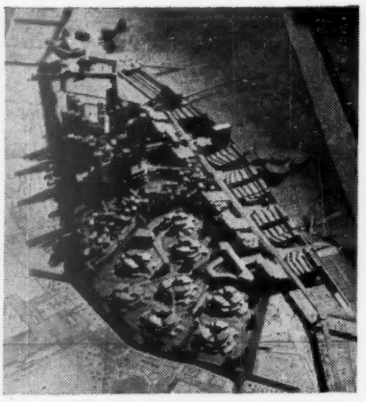
24, *a steel building, is a required exercise in the third year, and this one is an envelope to cover, and to exhibit, Roman remains. It is a fluent, skilled piece of work and the presentation is as good as one could expect in Year* 3. *There are strange things, however. It looks like a two-storey building (whereas it is a single volume in fact) and the provision for viewing inside it seems almost incidental and unimportant.*

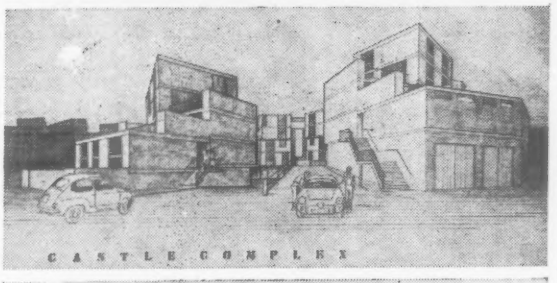
25, *the Furniture Manufacturers Association showrooms is a particularly fine example of the work done recently at the Regent Street Polytechnic and their rather specialized preoccupation with structural techniques. On the lower floors are the firm's offices, the auditorium is poised by the ramp, and the top floors are lettable offices. The building is of* Ferro-Cimento *supported by a precast concrete frame which seems to be structurally redundant. It is probably essential, visually, to impose an architectural order on what might otherwise be mistaken for automobile engineering and everything is so openly stated that one can see at a glance the long circulation routes.*

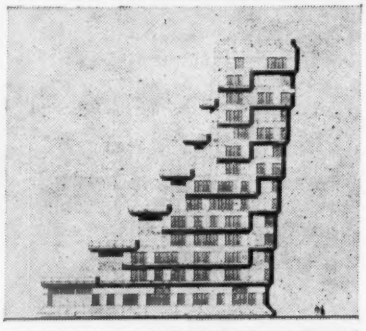
year 4

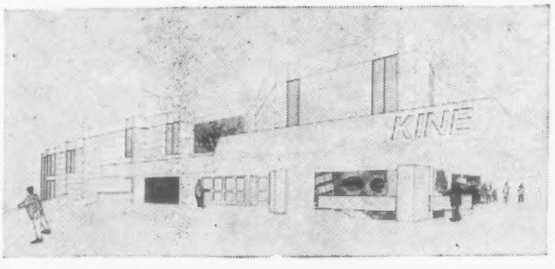
26 | 27
28 | 29
30 | 31
32 | 33
34

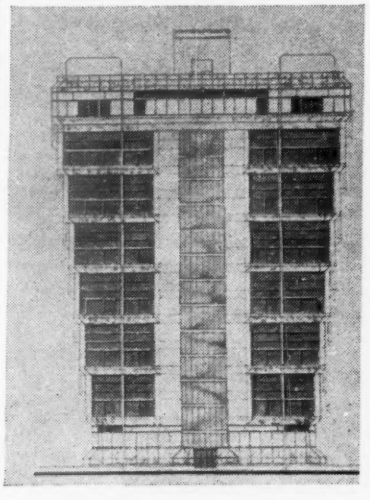


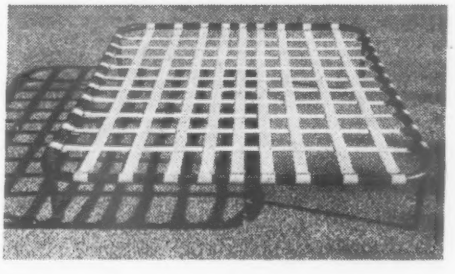


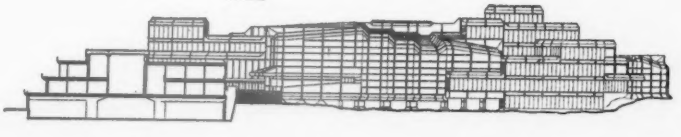


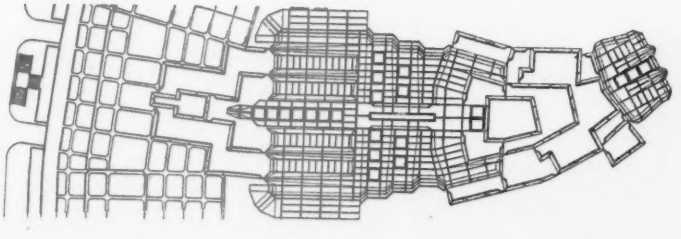












26, 27, 28, *this Westminster scheme (on the metropolitan scale required in fourth year) is bounded by Parliament Square, Victoria Street, and Victoria Station and has St. James's Park on its north side. In this futurist-flavoured layout the city worker arrives at the station and is taken by travellator through the shopping,* **26,** *to the small professional or the large commercial offices. In the remaining greenery, which is linked to the Park, stand the large stunted 'castles,'* **28,** *which contain luxury flats built round a central service court. The result is a clear image of the students' intention, which is basically a zoning idea. Victoria Street, which is a rather dead shopping area, receives wedges of new shops, with rear servicing, on both sides of the travellator system,* **26.** *The residential area is placed next to the Palace and the commercial area adjacent to Parliament Square.*

29, 31, *a tapering block of luxury flats from another scheme for the same area. The steps diminish with the size of the flat and form terraces overlooking the Park.*

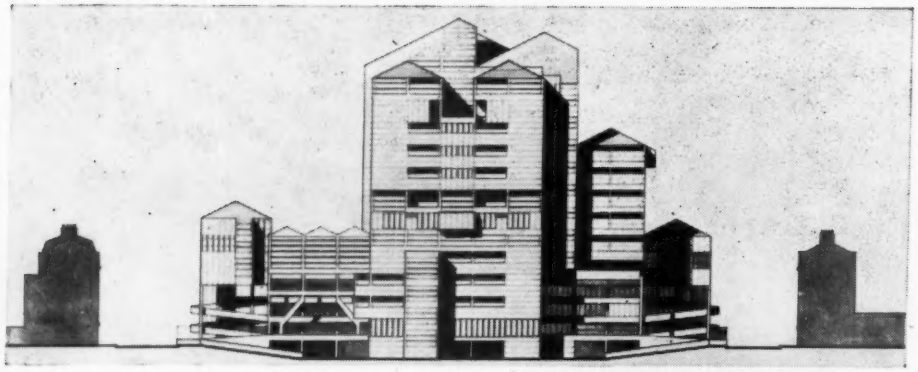
30, *a cinema which effectively integrates display technique with its built form, in a manner that derives from the current student interest in pop-art imagery, as well as ideas on the integration of the arts.*

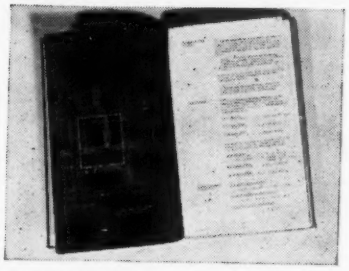
32, *the bed is a good example of student/user design. It is made of steel tube, the legs terminate in large ball bearings, and it is sprung with unequally spaced strip rubber secured with copper rivets and washers.*

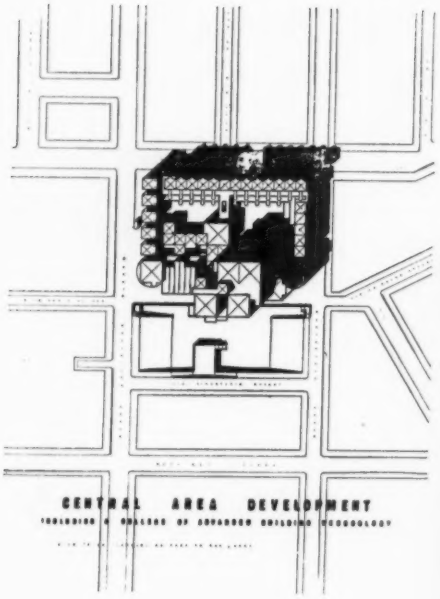
33, 34, *the concert hall, in precast concrete panels (precast concrete is a fourth year subject) is part of an aggregation of buildings which the student-designer felt had its own animal identity (a recognizable head and so on). He has been fairly successful in producing simultaneously a rather good building and an armadillo.*

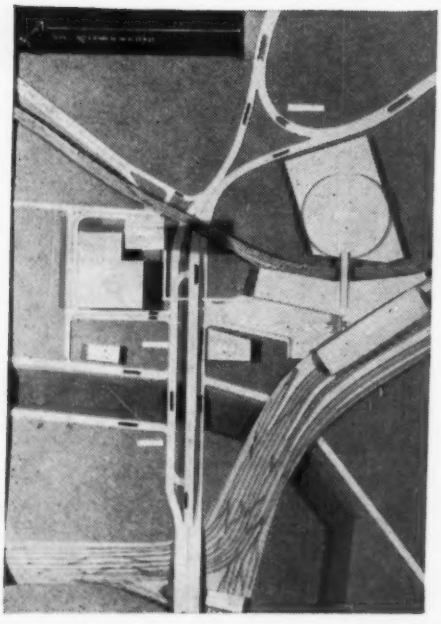
year 5

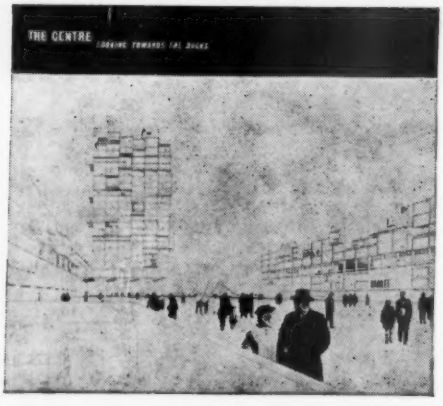
35 | 37
36 | 38
— | 40
39 | 41











35, 36, *a central London redevelopment project for a school of advanced technology (architecture, building, surveying and engineering), residential accommodation, shops, commerce and light industry—a fifth year thesis-subject by Michael Haskell of Regent Street Polytechnic.*

The school is located in the large tower, the shops on ground level, commerce and light industries on the basement and lower floors and hotel accommodation on the north and last sides of the site. On two corners of the site are car ramps towers which feed each end of two floors of car parking. Lecturers' accommodation, maisonettes and flats, are sited on the west side.

37, *Haskell's design is accompanied —as it should be—by a thorough, considered report containing photographic reductions of the drawings. It is a most capable scheme, but two doubts remain; the artificial lighting and ventilating of all the commercial and light industrial floor area (124,000 sq. ft.) and the use of a steel frame structure with panels of pink anodized aluminium. It looks like, and would probably be better in fact in, precast concrete.*

38, *the culmination of the furniture construction programme; the integration of mass produced and purpose made units in a single structure.*

39, 40, 41, *road planning and central areas scheme for Bristol—the work of a post-graduate group at the Royal West of England Academy—primarily concerned with an improved traffic system. This is broken down from the regional trunk roads, to those linking central areas, to local roads. Traffic is brought quickly into the centre and parking provided. Above this a pedestrian platform is formed and shops, flats and offices are directly accessible from it. The scheme was costed, exhibited and publicized energetically, but was eventually turned down by the local authority. Nevertheless, independent research of this kind can only be undertaken by schools, but when it is sufficiently realistic and immediate, it usually has some effect outside the school itself.*

continued from page 316]

Technology infiltrates, most slowly, into the house via the components (doors, windows, flooring, etc.) and the mechanical equipment.

The commercial block with its simple repetitive accommodation is ideally suited to the *standardization* of components; the structural elements, cladding, partitioning, equipment and furnishing.

The industrial problem, power station, oil refinery, etc., is constructed directly and functionally in the *engineering* tradition of ships and railways.

The spiritual problem, the church, which has not yet been solved by dedicated functionalism, has responded to a more *personal*, indeed, emotional approach.

In addition, each constructional material exerts its own particular discipline. Each has certain structural, functional and plastic limitations which are unique and characteristic. Examples like the *brick* Liverpool warehouses, the *glass* Palm House of Decimus Burton, the *timber* bridge of Palladio and the *concrete* Governor's Palace of Le Corbusier indicate the extensive range and divergency of expression which result from this premise.

Architecture is generated by order; this is a synthesis of the brief, the site, the technical means and the plastic intention. Architecture is the organization of these things. In this order, geometry is of significant importance and is fully realized when it integrates, simultaneously, structure, space, function and the plastic idea.

Architecture is concerned with the form and growth of our environment, villages, towns, suburbs and cities, and the methods by which each of these structures can change or adapt itself to today's needs. Within these structures a hierarchy is developing in which each type of building (residential, commercial, industrial . . .) has a distinctive form as a result of its function, an appropriate location as a result of convenience and a symbolic emphasis as a result of its importance.

City building, in London, has shown the meaningless confusion of building individual blocks without a constructive regard for the cumulative result. The post-war satellite towns demonstrate the same consequences when old planning concepts are used to solve new problems. Both show clearly the limitations of conventional town planning techniques and their failure to provide an acceptable environment. It is certain that creative solutions are only likely to come from architects and the schools, indeed, in other countries Aalto, Le Corbusier and Kahn are already involved with the complex problems of building today's cities and towns.

This dissatisfaction with man-made environment is felt outside architectural circles. William Molley Whyte, in an article which describes a great many functional deficiencies of our cities asks: 'And how are our architects and planners responding? With superb technical ability and a truly remarkable unity of approach, they are freezing on a design for living that is the antithesis of everything the city stands for. Typically, the new projects consist of a series of high-rise tower apartments set in geometric patterns on an abstract green space carefully preserved against human encroachment. The results are not 'cities within cities,' but anti-cities, and it is characteristic that they are sealed off from the surrounding neighbourhoods as if they were set in cornfields miles away.'

Whyte's comment is fair. The tower blocks in the landscape, the Ville Radieuse, is still the image for most high density housing schemes and Le Corbusier's Utopia has been reduced by adaptation and modification to lean, minimum essentials so that the results are now far removed from the fullness of the original ideal.

It is necessary to re-establish our aims, to define the forms we propose for our towns and cities. These large scale planning studies usually require a fairly extensive preliminary research, which is beyond the means of the individual architect or small office. But the architectural school is in a most advantageous position. By group effort, these involved problems can be assimilated and solved in a completely realistic manner.

Acknowledgments for the use of illustrative material are due to: the Architectural Association, London; The Regent Street Polytechnic, London; The School of Architecture, Cambridge University, and The School of Architecture, Royal West of England Academy, Bristol. The inclusion of schemes from these schools does not, of course, imply that they support, or employ, the model curriculum set out in this article. Restrictions of space have made it impossible to publish the name of every student concerned in the schemes illustrated.

THREE CHURCHES

The three recently completed churches illustrated on the following pages belong to three different denominations, a hopeful sign that the new life which at last is beginning to be apparent in church architecture in England may represent a general awakening rather than an isolated case or two of enlightened patronage. All three are inexpensive, but lose nothing by the simplicity this has imposed on them. To the great advantage of all three the architect has been allowed to design the furniture.

METHODIST CHURCH, MITCHAM

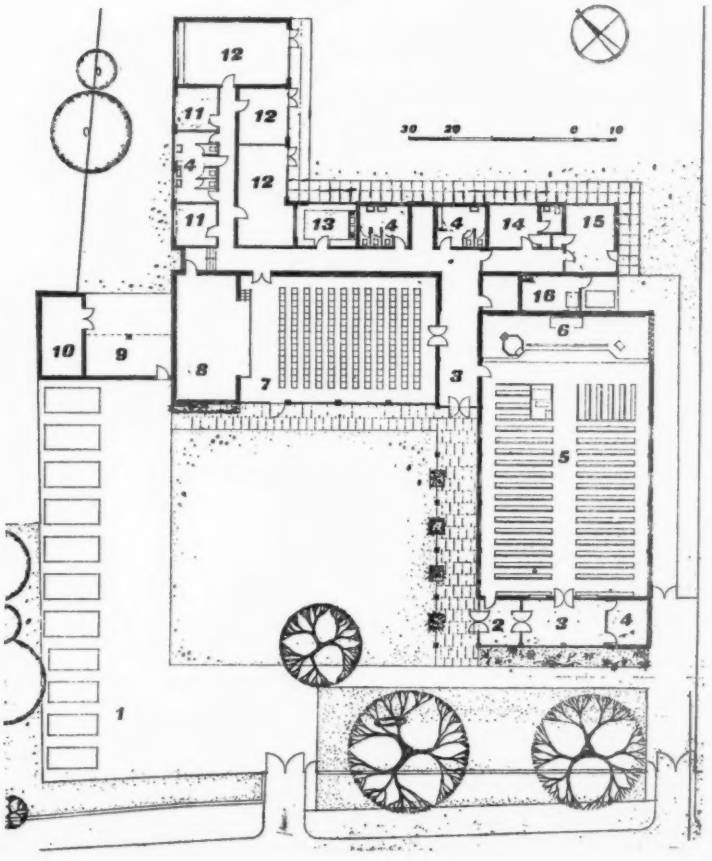
ARCHITECTS | ***EDWARD D. MILLS AND PARTNERS***

On Mitcham Cricket Green: an L-shaped group consisting of a church to seat 300 (replacing a bombed church on a nearby site) and a church-hall with classrooms, etc., adjoining. There are gardens in front of and behind the building. The church has its own vestibule at the west end, but can also be entered from the vestibule of the hall, which is otherwise independent.

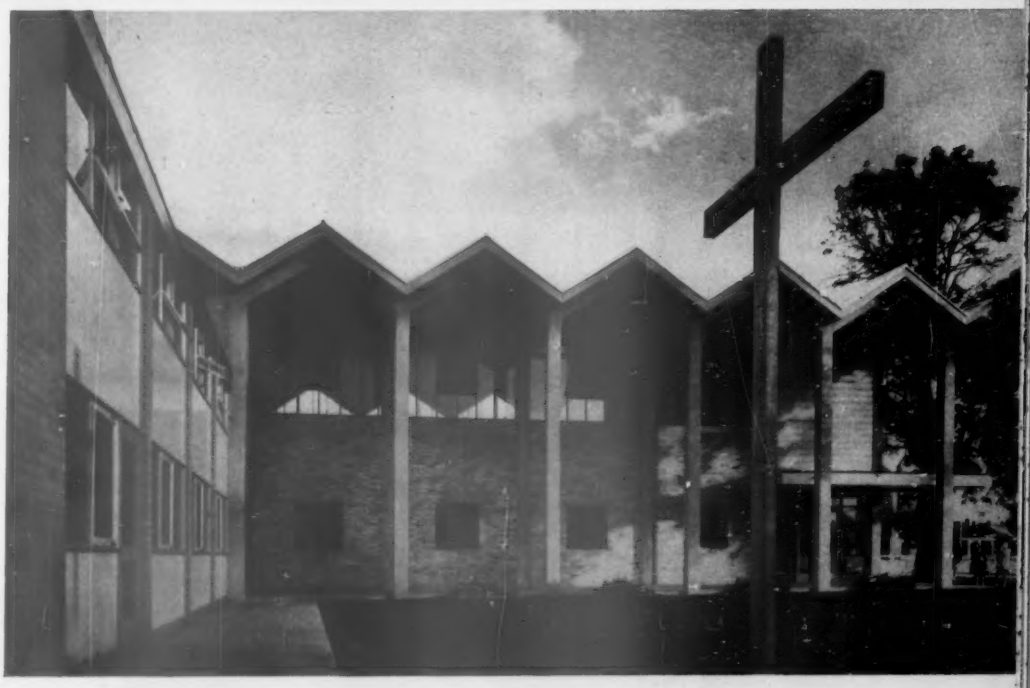
The hall is reached by a covered way along the north flank of the church. It seats approximately 200 and has a stage, three large classrooms, two dressing-rooms, and two vestries. Two of the classrooms can be made into one by folding doors and adjoin the kitchen, which has a service counter so that they can be used as a youth canteen.

The construction of the church consists of a reinforced concrete frame designed by Ove Arup and Partners with brick infill walls, hardwood windows, and a folded slab roof finished inside with timber strips. The hall and classroom block has load-bearing brick walls and timber roofs, covered with woodwool slabs and asphalte. Ceilings are acoustic tiles and windows softwood, painted. Heating is by hot air in floor ducts and can be independently controlled in different parts of the building. The church organ, which is in a loft over the entrance to the hall, has a remote control system linked to the console in the body of the church.

key
1, car park. 2, lobby. 3, vestibule. 4, cloakroom. 5, church. 6, communion table. 7, hall. 8, stage. 9, bicycle shed. 10, tool store. 11, dressing room. 12, classroom. 13, kitchen. 14, minister's vestry. 15, stewards' vestry.



1



1, from the west, showing the covered approach to the hall along the side wall of the church. The concrete frame supporting a folded-slab roof has brick infill walls with small hardwood-framed windows below and large clerestory windows above. 2, the north-west wall of the church, with the hall on the left, both facing on to the same garden. The entrance from Mitcham Cricket Green is on the right.

2

METHODIST CHURCH, MITCHAM

3

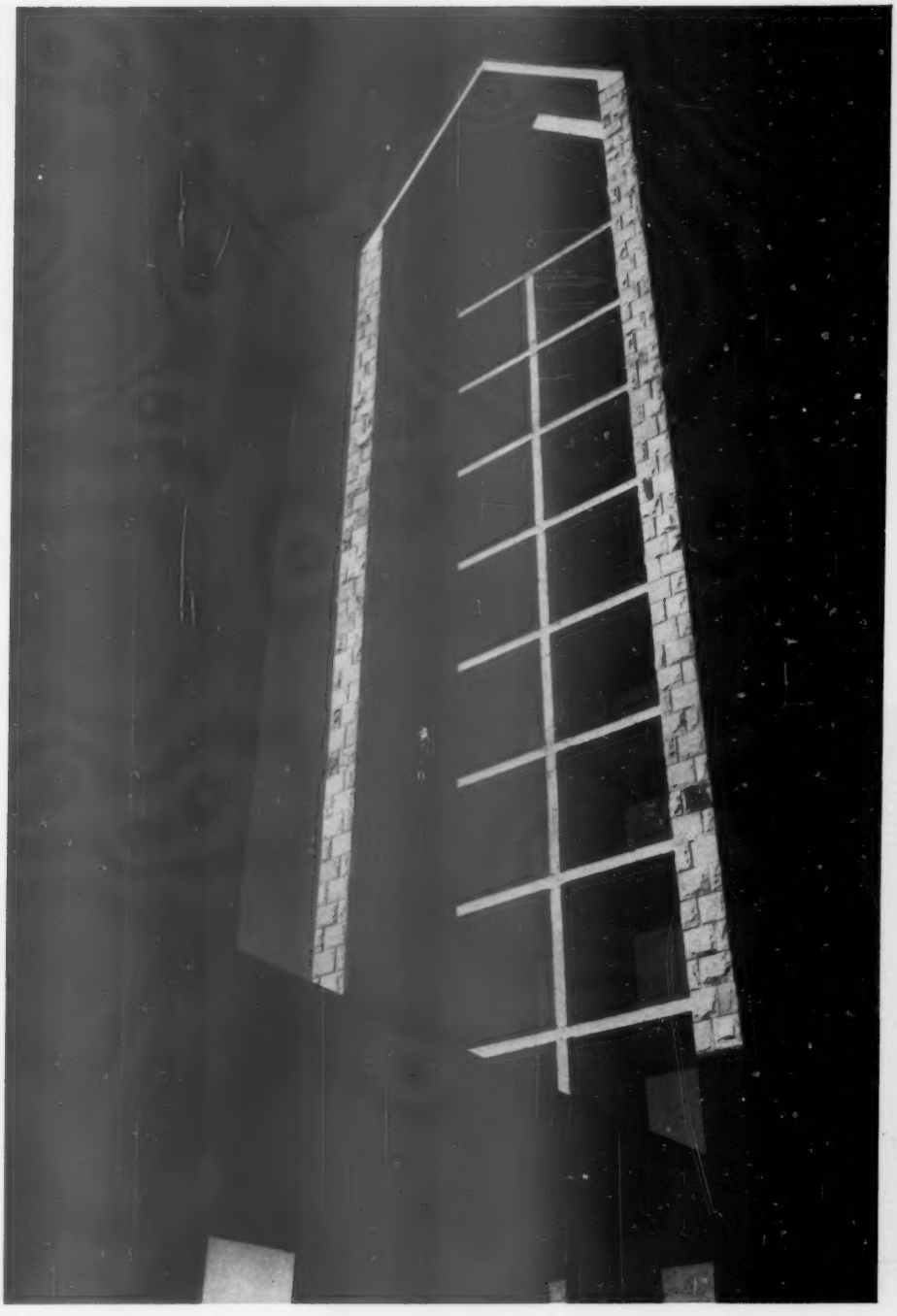
5

6

4

3, inside the church, looking towards the chancel. The end wall is faced with riven York stone and the ceiling with narrow strips of timber in a natural finish.
4, close-up of chancel, showing York stone wall and side lighting.
5, corner of church and covered way, looking north.
6, looking from the chancel, with a corner of the pulpit on the right.

7



8

7, the foot of the tower, with the nave of the church beyond.
8, tower and connecting link to church, which serves as a canopy over the entrance.

ROMAN CATHOLIC CHURCH, LANCASTER

ARCHITECT	***TOM MELLOR***
associate architect	***Jack Waterhouse***
assistant architect	***David D. Silcock***

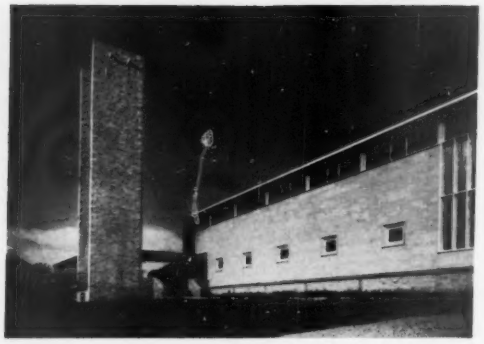
On the edge of a new housing area. The site is triangular, at the junction of three important roads, and the detached tower is designed to be seen from all three directions. The church is dedicated to Saint Bernadette.

Liturgical requirements and the need for direct vision and a close relationship between priest and congregation determined the equal width of nave and chancel, the raised chancel, the siting of the baptistery (at the south end) and the open screen between baptistery and nave. Chapels and sacristies are ranged along the west side.

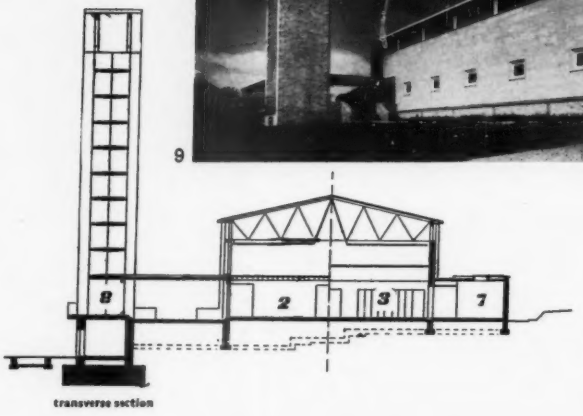
ROMAN CATHOLIC CHURCH, LANCASTER

The reredos is by John Piper and the Stations of the Cross and baptistery crucifix by Peter Watts, who is also designing a large crucifix for the tower. The furniture was designed by the architect.

The tower has a reinforced concrete egg-crate frame; otherwise construction is load-bearing stone—that in the tower and gable-walls of local rubble and that in the main walls of ashlar above a rubble base. The ceiling of the nave is of open timber slats, strong enough to allow access to the light-fittings above it. It follows the line of the underside of the steel roof-trusses. A gap in the centre is spanned by two tension bars connecting the halves of each truss.

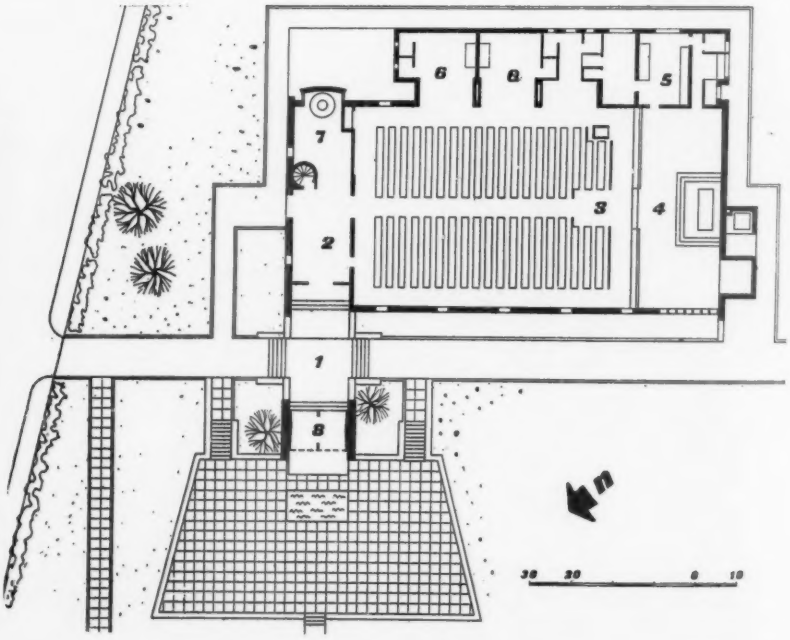


9



transverse section

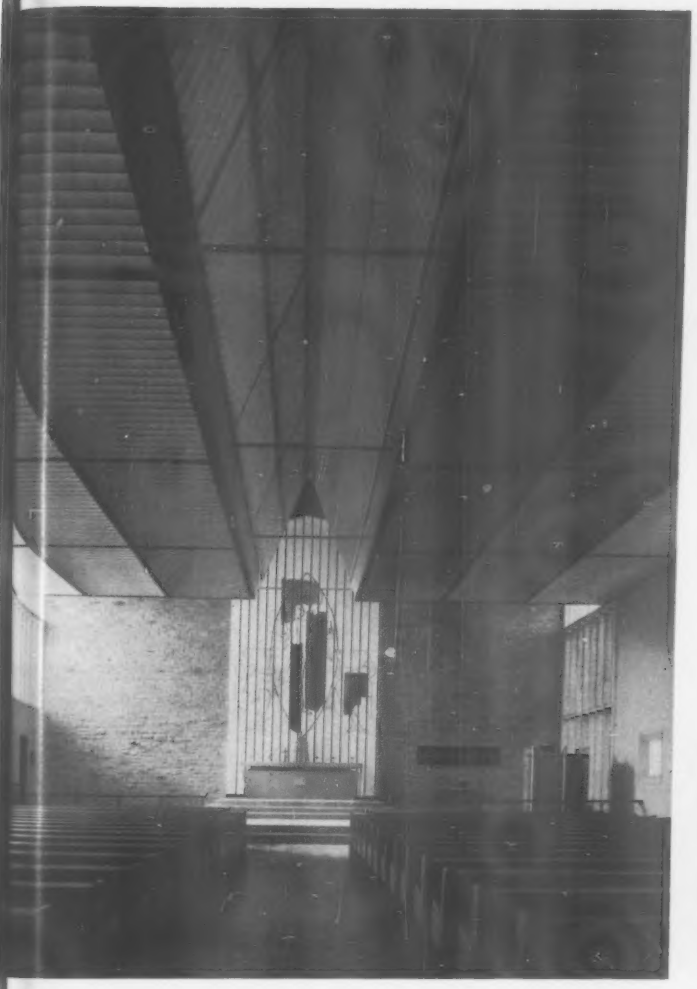
key
1, entrance.
2, narthex.
3, nave.
4, sanctuary.
5, sacristy.
6, side chapels.
7, baptistery.
8, tower.



10

9 (top of page), south side of church and free-standing tower.
10, the altar, with reredos by John Piper.
11, looking towards the altar through the metal screen that separates the nave from the entrance narthex.

11



13

12, the nave, looking towards the altar, showing the ceiling faced with open timber slats, rising in the centre to the peak of the roof. The ceiling is the principal source of light, natural and artificial.
13, looking into the baptistery, through the screen at the west end.
14, one of the side chapels on the north side of the nave.
15, baptistery and font. The sculptor of the crucifix is Peter Watts.

14

15

RECONSTRUCTED PARISH CHURCH, TOLWORTH

ARCHITECT | **KENNETH WOOD**

16, the new entrance end of the church, faced with mahogany boarding below and an open cedar screen above.

16

The conversion of an existing dual-purpose church-hall for purposes of worship only, and the addition of a new hall and ancillary accommodation. The site was restricted, necessitating the placing of the hall alongside the church close to the edge of the site, and the required extra accommodation could only be given in the church by reversing its orientation and adding a new chancel, sanctuary and vestries to the end. There were also difficulties of light, which determined the unusual shape of the hall and its structural system, as well as the glass screen which, 30ft. long and 13ft. high, occupies the whole south side of the sanctuary. The light coming through the screen is diffused by white terylene curtains.

17

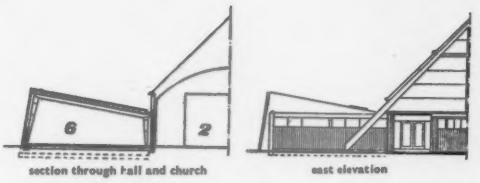
17, the same end of the church as that shown above, before reconstruction.

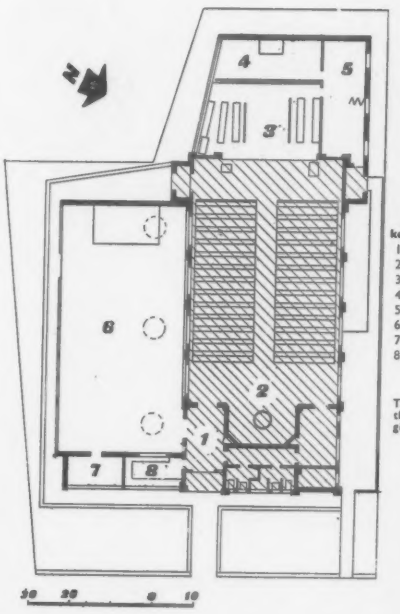
The existing bell-turret at the east (now the entrance) end of the church has been removed and the end brought forward to cover the new vestibule, a new facade being created in the form of a laminated timber arch, beneath which the bell has been rehung. The tiling

of the roof, however, has not been extended, the new part of the roof being left with open timbers to admit light to the baptistery between the entrances. Similarly, the new gable end is filled by an open timber screen of cedar. The need for structural bracing has been used to provide a large cross in the gable.

The new chancel, etc., is of timber frame construction with brick cavity walls. The hall is similar, with the main timber frame of Gurjun. The hall and the sanctuary screens and external boarding are mahogany. The new arch at the extended end of the church is of laminated Douglas fir, and the cross of Gurjun.

Emmanuel Church is a Church of England evangelical low church, demanding the greatest simplicity in the furnishing. New furniture was designed by the architect and consists of Lord's Table with black enamelled steel framework, brass trim and beech rail and top, stalls and lectern of Douglas fir on black steel framing, hymn and psalm boards of Doussie and white beech and pulpit of Douglas fir for the framework and Doussie for legs, base and handrail.





18

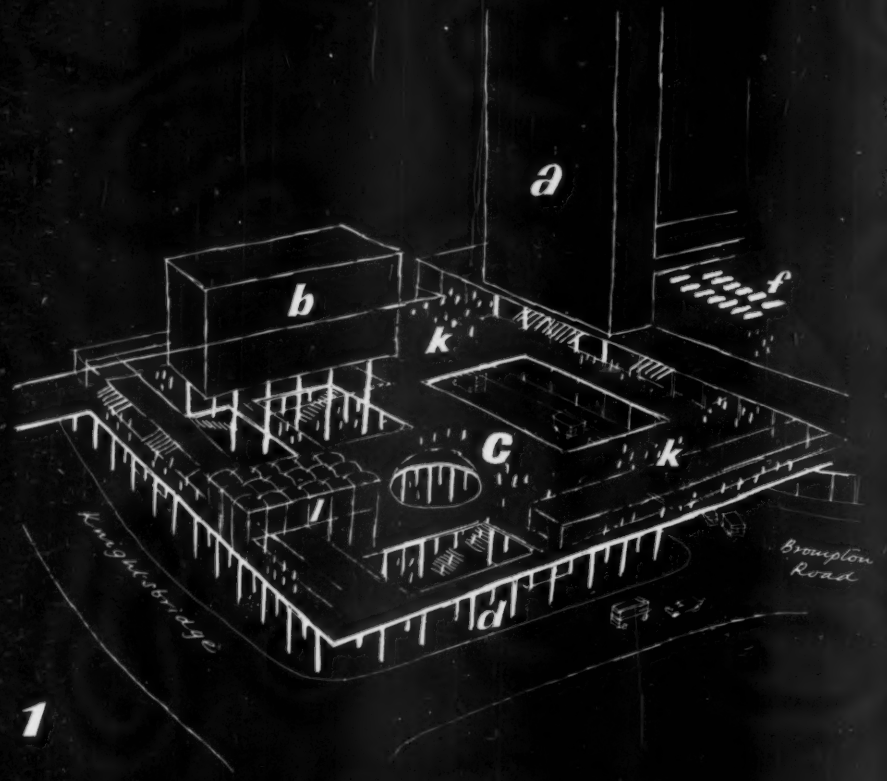
19

20

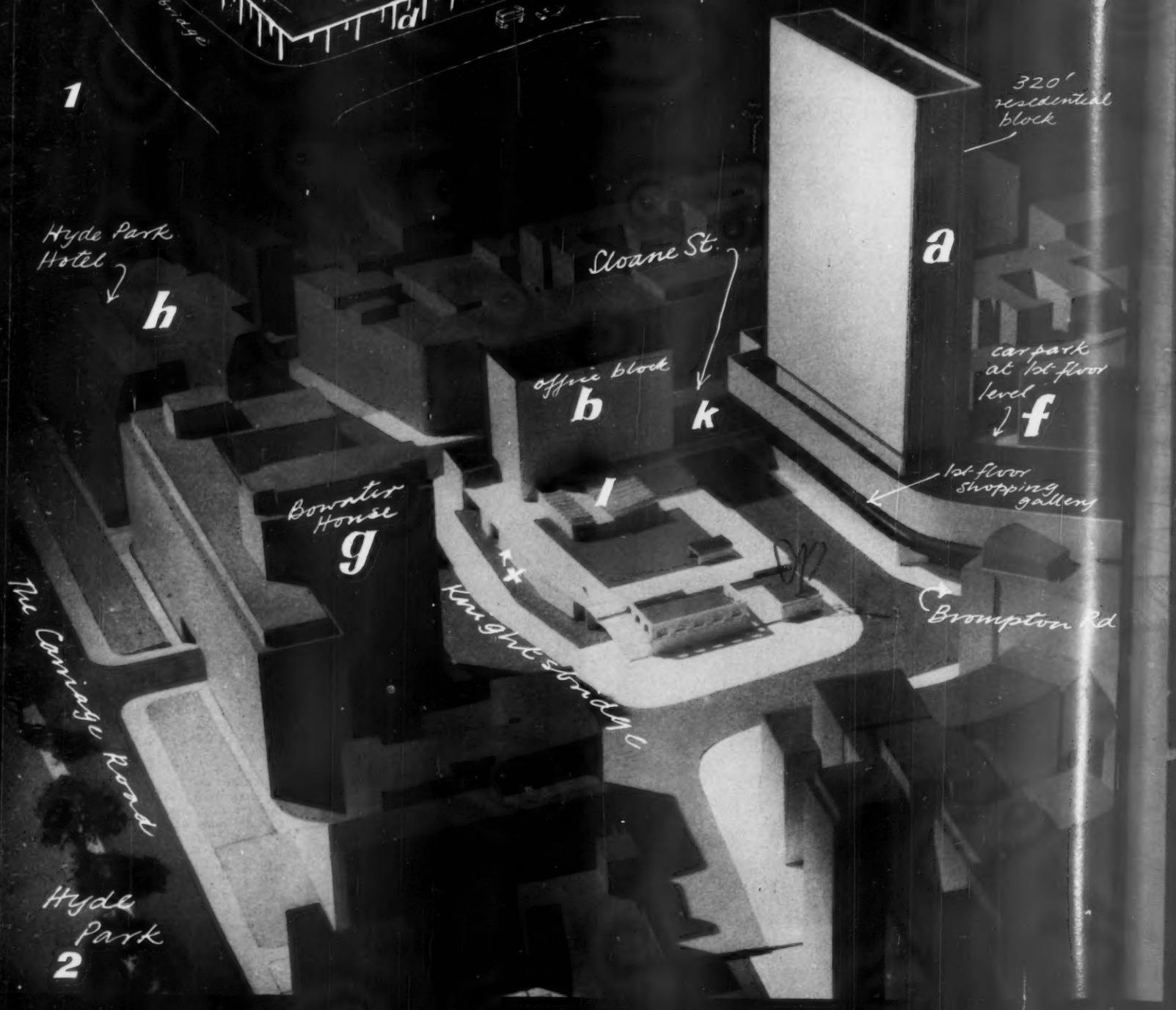
21

18, the extended end of the roof showing exposed timbers and gable filled by open cedar screen.
19, interior showing pulpit, which has a frame of Douglas fir, legs, base and handrail of Doussie and front formed of vertical rods of Douglas fir.
20, the window wall of the hall along the edge of the site. The end wall is in brick.
21, inside the hall, constructed with a timber frame and box beams in Gurjun.

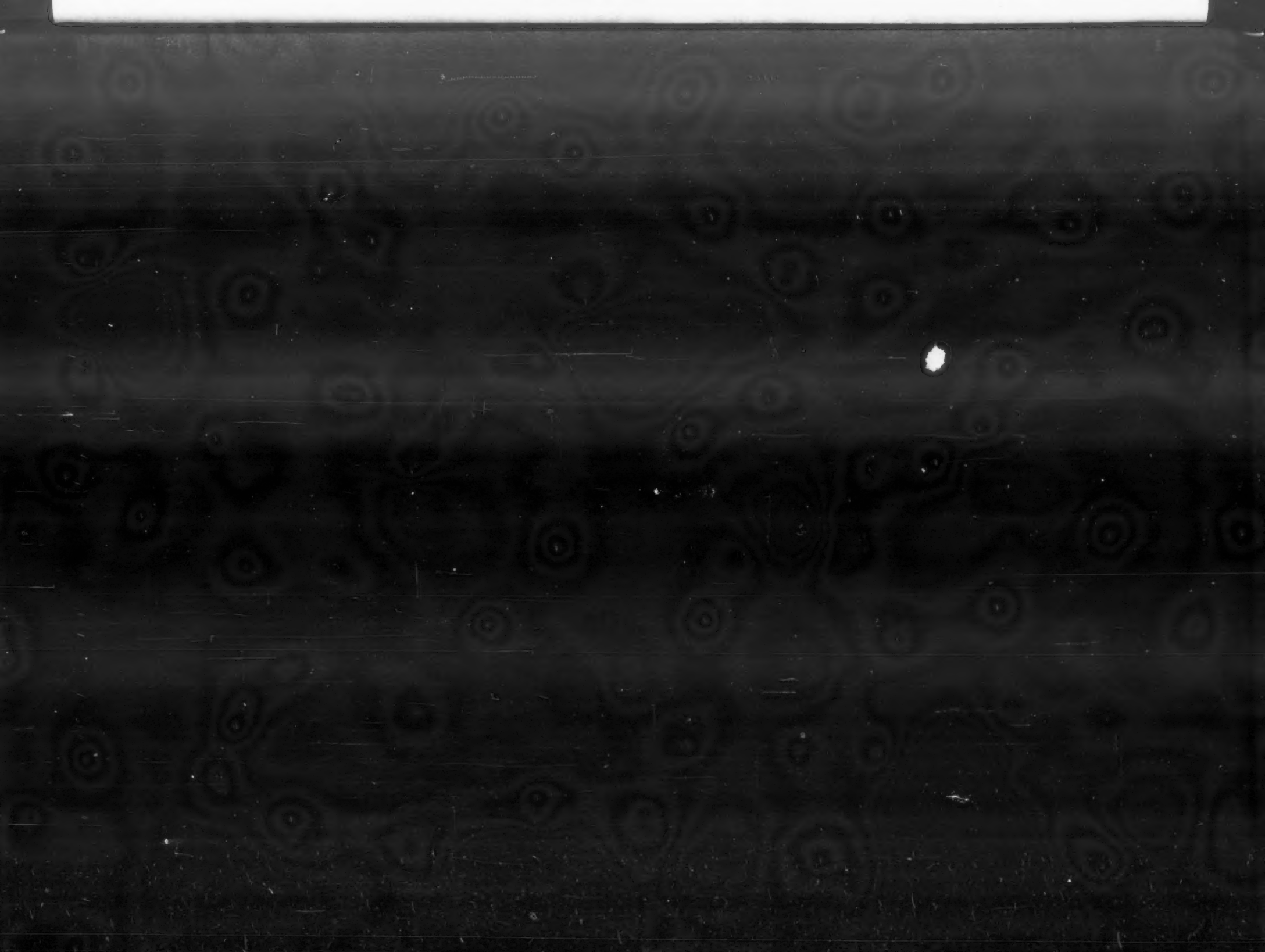
The LCC scheme for Knightsbridge, shown in diagrammatic form below, **2**, with its 320 ft. high residential block, ***a***, has been opposed on the grounds that high buildings should not be permitted so close to Hyde Park. A solid wall of high building right on the edge would indeed be fatal but towers set back and seen above the trees could, with skilful attention to silhouette and grouping, look very fine. However, in this scheme, it is the design of the central traffic island that is all important and in the following pages the proposal is put forward for a first-floor deck, ***c***, left, raised on columns to unify the two sides of the square, as shown in **1**.



1

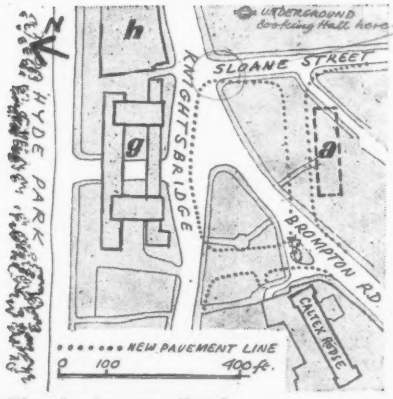


2



Kenneth Browne

KNIGHTSBRIDGE GREEN



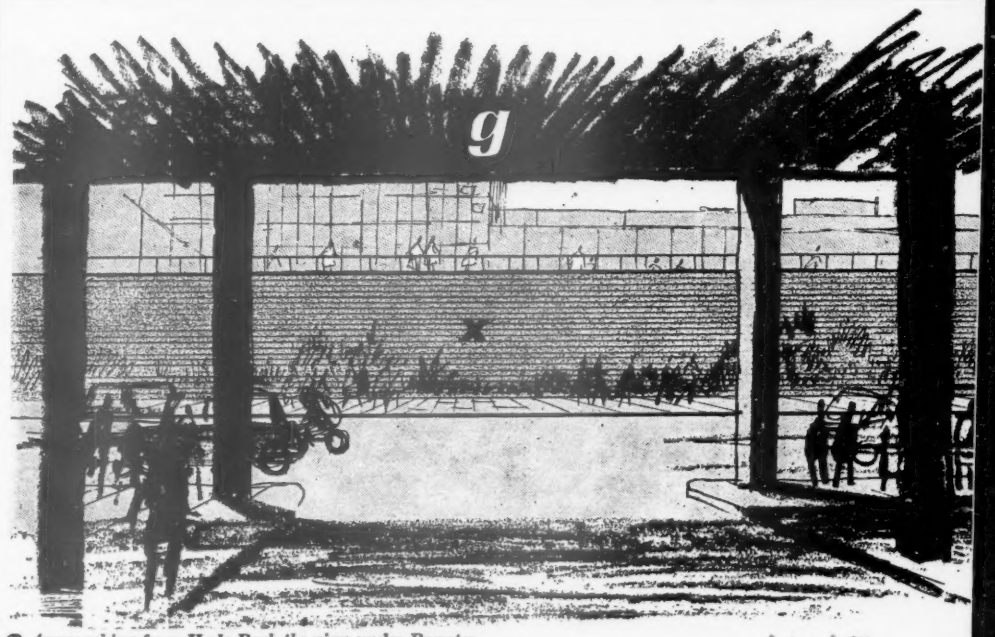
Plan showing area affected.

key to illustrations
a, tower block, flats
b, office block
c, pedestrian deck
d, ground level paving
e, Underground booking hall
f, roof car park
g, Bowater House
h, Hyde Park Hotel
k, bridge
l, restaurant
x, podium

In their desperate attempt to ease the worst points of congestion, the traffic authorities intend to follow up the Hyde Park Corner scheme, now under construction, with a giant 400 ft. roundabout at the junction of Knightsbridge, Sloane Street and Brompton Road, the next bottleneck to the west. The demolition required to make room for it can be judged from the map above. In the absence of a realistic plan for London's traffic, this roundabout is unlikely to prove more than a local remedy. However, since its position, shape and size have been decided, the important thing now is to ensure that it is not just another large area of wasted space ringed by traffic.

The LCC planners have appreciated the problem and, aided by a co-operative landowner, propose to treat this as a comprehensive development area so that a co-ordinated scheme can be evolved. The block model (*2* facing page) is a statement of their general intentions, and shows that they propose to build on the roundabout a large pedestrian terrace or deck on a podium, beneath which is a ground level car park. On the terrace stand an office block *b* and restaurant *l* reached directly by escalator from Knightsbridge Underground station. A footbridge *k* connects across the road to a first-floor shopping gallery under the residential tower block *a*. At the rear is a roof-level car park *f* reached by ramp from a side street.

This seems the right kind of approach to the problem and the idea of a large pedestrian deck well above traffic level is an admirable one. The alternative put forward here is merely a development of this idea, based on a suspicion that from the street approaches (sketch *3* on right) the

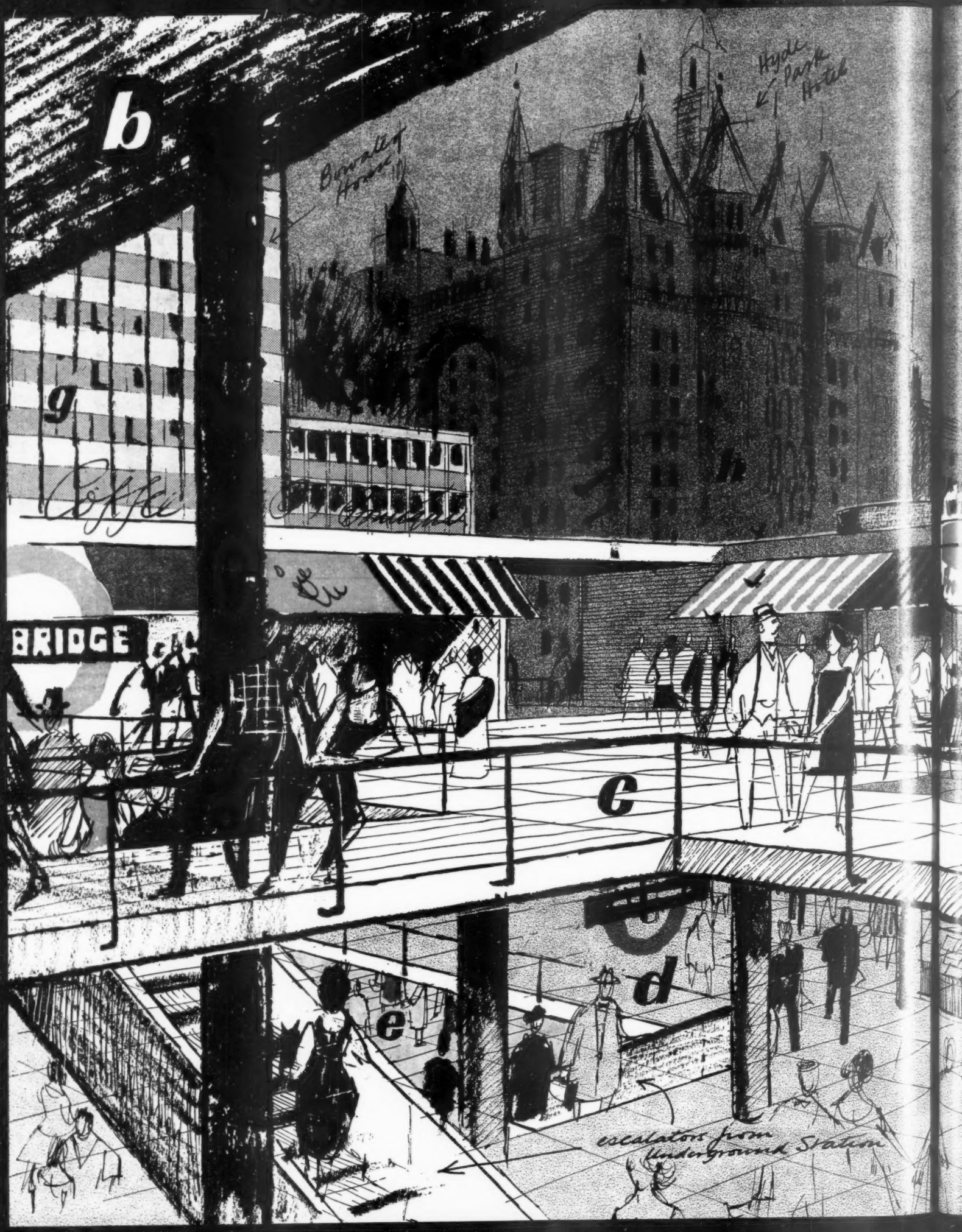


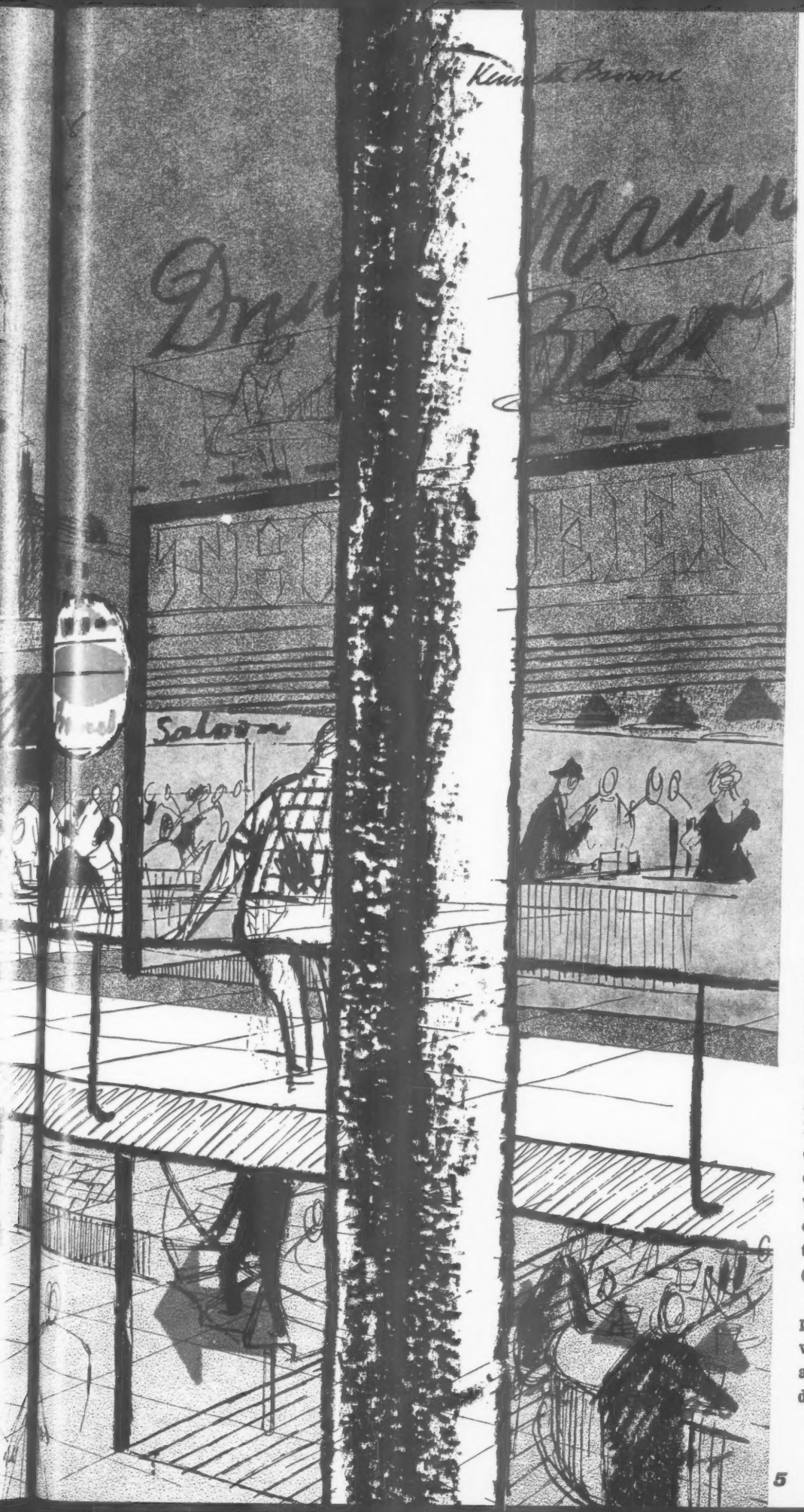
3 Approaching from Hyde Park the view under Bowater House g is stopped short by the solid podium shown in 2 . . .

solidity

4 . . . but if the terrace c is raised on columns as in 1 the eye can penetrate to the kaleidoscope of traffic and shops beyond. Some physical barrier (e.g. railings) would be necessary.

transparency


b
Hyde Park Hotel
Bowater House
g
Coffee
BRIDGE
c
d
e
escalators from Underground Station



*Typical view from the pedestrian deck suggested in **1**, looking under a building **b** raised on pilotis. The deck is pierced so that activity can be seen on three levels at once. Escalators from the Underground booking hall **e** lead up to ground level and up again to deck **c**. Beyond the perimeter shops are Bowater House **g** and the Hyde Park Hotel **h**.*

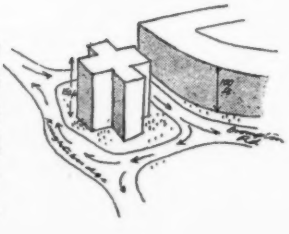
podium itself **x** might appear too massive and visually divorce one side of the new square from the other. If the pedestrian deck were raised on columns **1** (page 332) the effect would be light and transparent and the opposite sides of the square would be linked **4**. To make this idea of a first-floor pedestrian deck really work it should, perhaps, be carried further. In plan it should be increased to the full area of the roundabout below, and be thought of as a continuous floating slab spanning across the street to the south and continuing under the tower block **a** to link up with the car park **f**. It should be pierced to admit light to the roadway and the ground-floor level of the island itself, and would now be large enough to accommodate a variety of activities. In piercing the slab interesting multilevel views could be achieved, **5**, and a new and exciting focal point provided for Knightsbridge. The raised pedestrian deck would be fed directly from the tube station **e** and contain small shops, kiosks, clubs, a pub and coffee bars, their intimate scale contrasting with the backcloth of high buildings across the street, such as Bowater House **g** and the Hyde Park Hotel **h**. This differs from the LCC scheme in looking inwards as well as outwards. A small theatre might replace the office block **b**. A ground-level service road would be required for the shops, and a certain amount of car parking space, but in the main this would be concentrated at **f** (see the first diagram, page 332).

Climbing from ground level **d** to the pedestrian deck **c** would now be an exciting visual experience **6**, the cut-away slab above suddenly revealing the 320-foot residential block **a** towering upwards.

The LCC scheme has been criticized by

View from ground level ***d*** *looking up to the pedestrian deck* ***c*** *with the tower block* ***a*** *soaring up beyond.* **6**

local residents for building on the traffic island. What is not generally realized is that no development would take place at all unless the owner could be certain of getting as much accommodation on the site as there is at present. So in fact the probable alternative to the LCC scheme, which piles up most of its accommodation vertically but does not increase the overall accommodation, is not an open, tree-planted square as many would wish but a development of this kind of which we have seen too many already.



1

Glass Showroom in St. James's, London

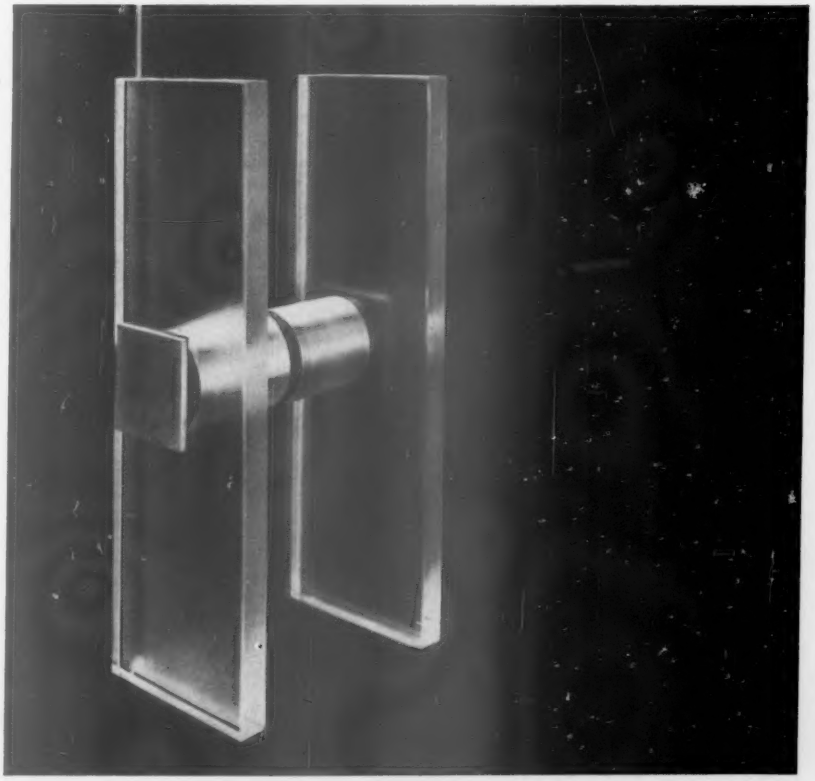
architect Margaret Casson

assistant Bernard Holdaway

A large upstairs room with a wide bay-window overlooking Green Park was required to be converted into a display of glass—glass pure and simple, in all the forms manufactured by the client (Pilkington Bros.) and in its natural form.

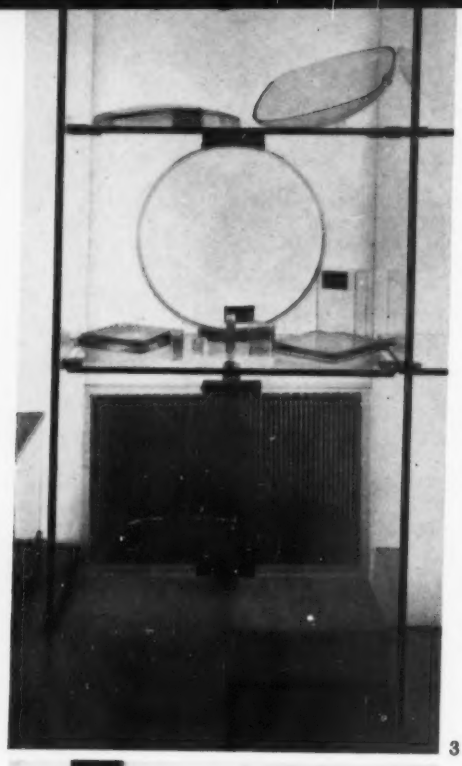
1, occupying the centre of the floor, half-way between the bay window and the mirror-clad back wall (which carries the reflections at the extreme right) is a maze-like composition of narrow sheets of polished plate glass running from floor to ceiling (see 5, over page). Transparent when viewed against the light, it makes an elaborate play of repetitive reflections when seen from the window side.

2, toughened glass door-pushes on one of the plate glass doors to the showroom, reflected in the black glass wall of the access-corridor.

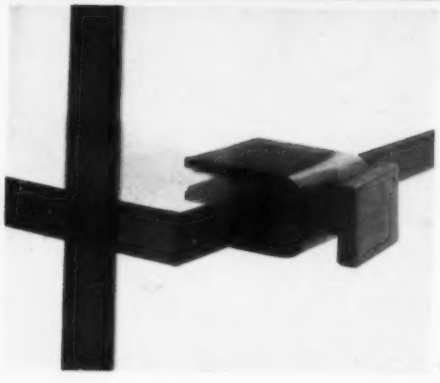


2

glass showroom in St. James's



3



4

6

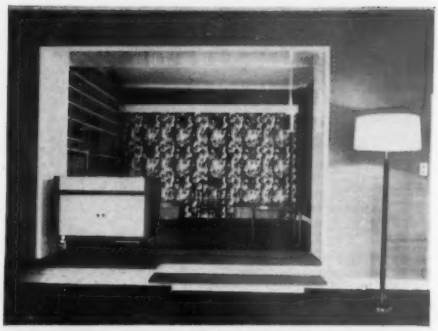
3, one bay of the glass shelving that runs down both sides of the room, to carry products for display. Underneath is an electric space-heater consisting of a flat metal heating-element sandwiched between two sheets of glass.

4, one of the metal clips securing a shelf to an upright panel—these clips are the only parts of the shelving that are not made of glass.

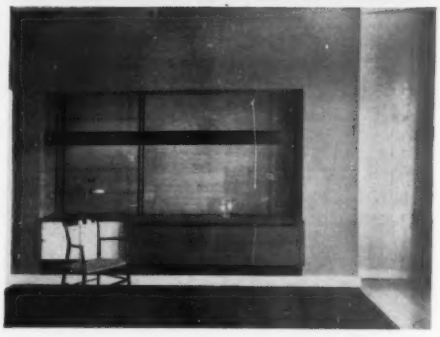
5

5, general view of the room from the entrance (which is on the raised dais whose edge and step are seen in 3). The glass panels of the central display are carried in slots in the ceiling and terrazzo floor, and are illuminated by lights sunk in the floor and ceiling. Other lighting comes from fluorescent fittings behind the shelving, diffused through a layer of glass fibre tissues. The windows are also curtained in heavy glass fibre fabric.

6, the only strong colour accent in the room—a low table with a top made entirely of plate glass, filled with large chippings of antique and optical glass in characteristic ambers, blues, and reds.



7



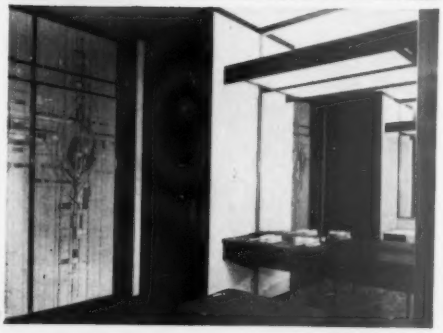
8

7, 8, two views of the living room, which occupies the whole of the first floor of the flat in Eaton Square (see opposite)—7 shows the study area up two slate steps from the main room, which lies across the front of the house, 8 (at right angles to 7) shows the built-in hi-fi installation and the gold mosaic wall flanking the window. The carpet is dark green and the walls are covered in grey-blue silk paper.

9, the bedroom, with entrance and wardrobe wall on left.

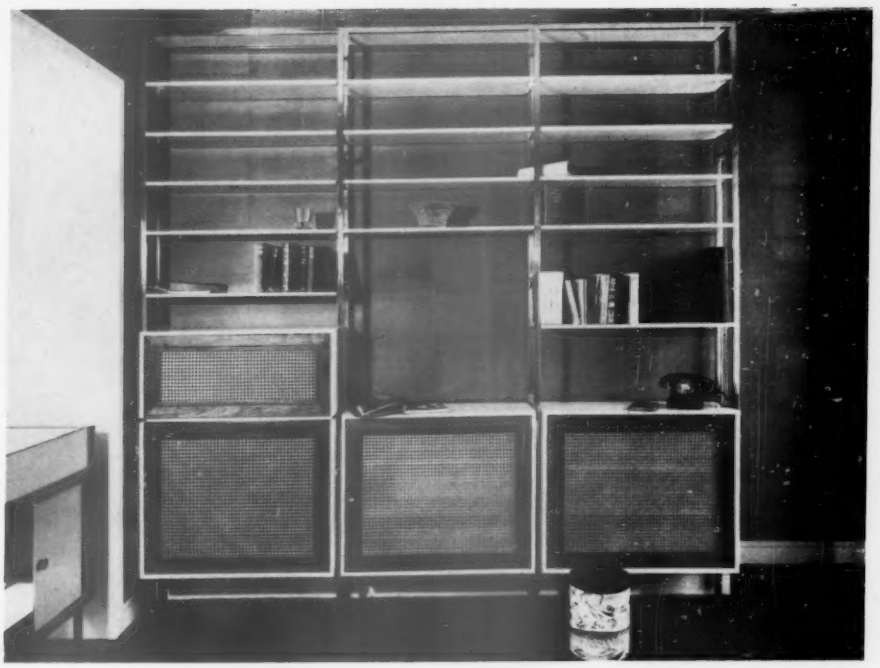
10, the bathroom—cupboards, etc., in the corners reduce the room to a cruciform plan which is 'doubled' by the mirror, seen here, and another mirror facing it over the bath; the doors at the left give access to the bedroom wardrobe from the back.

9

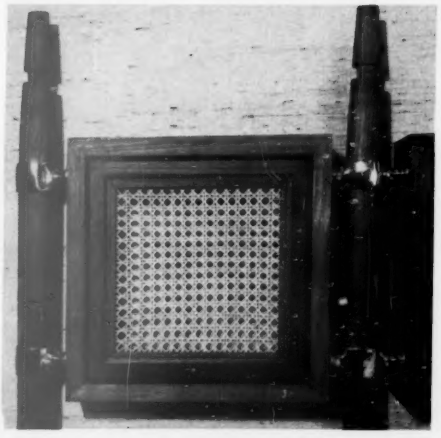


10

11



12



13

Flat in Eaton Square, London

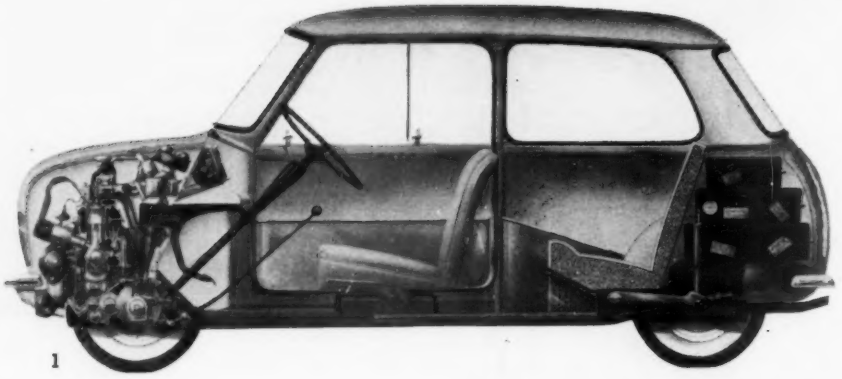
architect *Margaret Casson*

assistant *Heather Blake-Smith*

11, the small back bedroom which, like the master-bedroom, is at ground level.
12, the book-shelf unit in the study area (see 7, opposite), the frame of square, brass-finished tubes with white-painted woodwork, teak trim and caned fronts to the cupboards. The drink cabinet, left, has sliding tambour shutters and internal lighting with a shutter-actuated switch.
13, detail of French caning and teak frame, with brass brackets, which form the standard constructional devices of all the purpose-made movable furniture in the bedroom.
14, Degas sculpture on the hall table, which has a top of green serpentine marble, carried on a square, brassed frame. The hall floor is of black and white marble-pebble tiles, and walls are covered with orange silk-paper.
15, corner mirror in bedroom with long stool in foreground, and wardrobe doors at right. The inlay of brass and coloured plastics in the rosewood doors is by Mitchell and Hollaway.

14

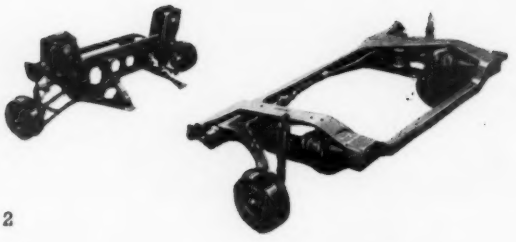
15



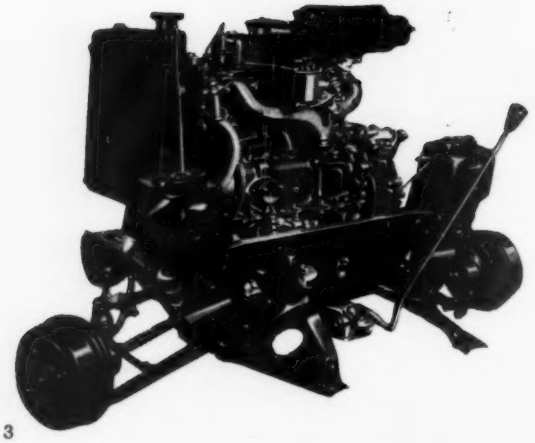
1

DR

design review



2



3

4

BMC miniature cars

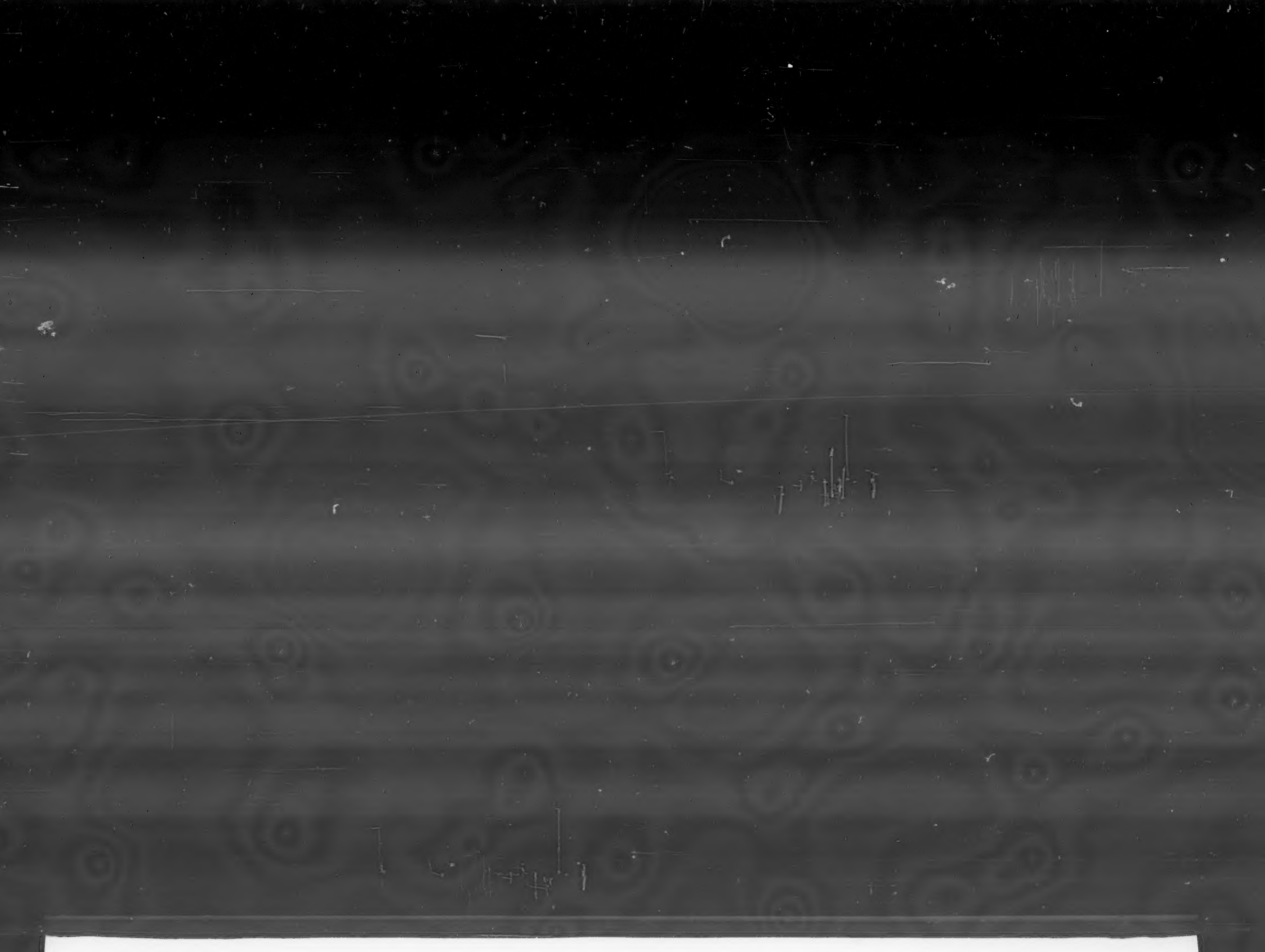
Answering closely to the functionalist dream of a motorized box on casters, the new, almost identical, front-wheel-drive Austin Seven and Morris Miniminor have been justly acclaimed as a radical departure in British car design.

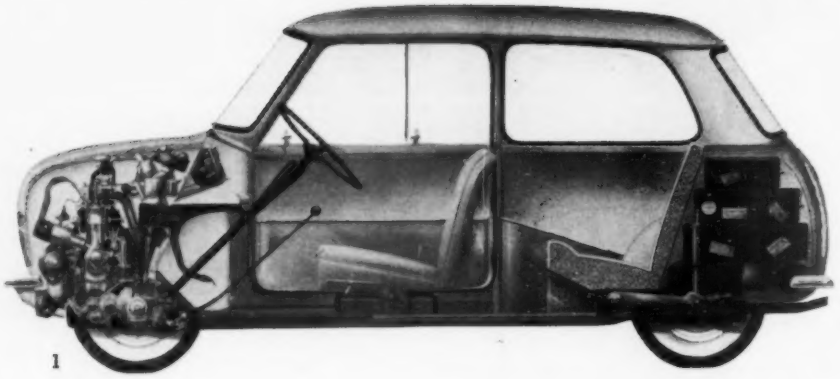
***1,** the section shows how the use of very small wheels, dismissed to extreme corners of the body shell, has made it possible to create a large passenger-space in a short car—it is to be hoped that other manufacturers will follow the lead established here by the designer, Alec Issigonis, and regard seating-dimensions as something that should answer an irreducible optimum, not an absolute minimum.*

***2,** the running-gear consists of two axle-aggregates fixed to the underside of the structural shell, an unusually clear separation of parts in automotive practice, where running-gear tends to be distributed all over the car, and mixed up with its structure.*

***3,** the power unit fits on top of the front axle aggregate, in the transverse position that has appealed to designers of front-drive cars all through the history of motoring, as in the German DKW models. The resultant unit, with all controls attached except the pedals (and their integration into the unit may be only a matter of time), could presumably be fitted to any suitable wheeled body as a kind of land-going outboard motor.*

***4,** in terms of styling, the bodywork of these 850 cc. cars is very frank about their internal arrangements and functions—except that there is no outward sign of the side-mounted radiator, which delivers its hot air into the near-side wheel arch. On the other hand, the management of external details and trim appears—as is so often the case with British cars—untidy and unconsidered: the raised "seam" that runs from the windscreen pillar to the front wheel arch appears to be simulating a large door, while that at the back, following the profile of the rounded rear quarter, breaks up what would otherwise be a compact form. The filler-cap and rear lights look as if they had been stuck on to the body as afterthoughts, rather than designed into it from the beginning.*

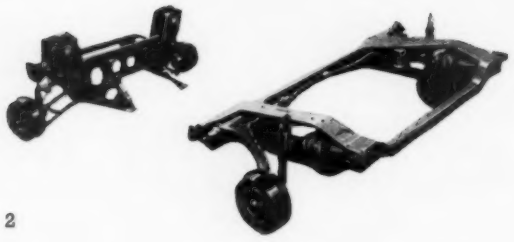




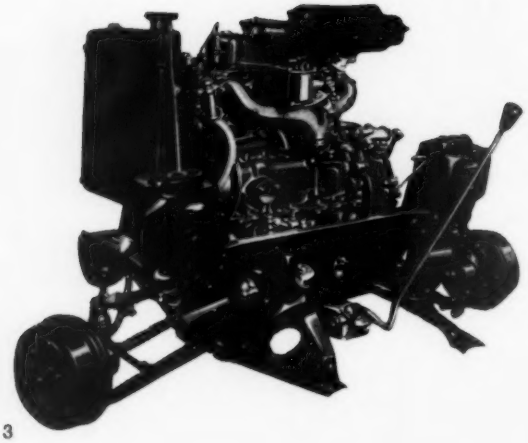
1

DR

design review



2



3

4

BMC miniature cars

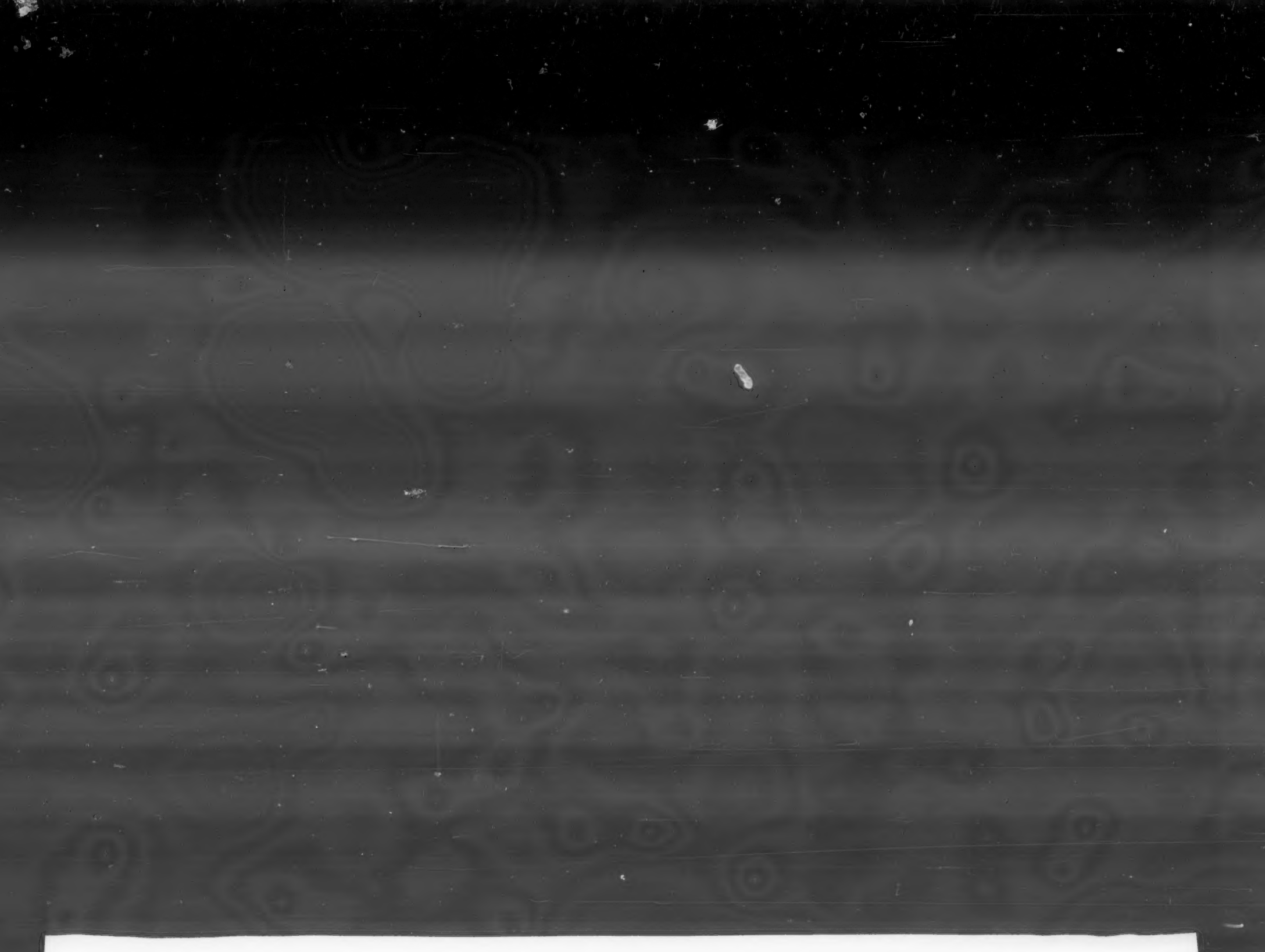
Answering closely to the functionalist dream of a motorized box on casters, the new, almost identical, front-wheel-drive Austin Seven and Morris Miniminor have been justly acclaimed as a radical departure in British car design.

***1,** the section shows how the use of very small wheels, dismissed to extreme corners of the body shell, has made it possible to create a large passenger-space in a short car—it is to be hoped that other manufacturers will follow the lead established here by the designer, Alec Issigonis, and regard seating-dimensions as something that should answer an irreducible optimum, not an absolute minimum.*

***2,** the running-gear consists of two axle-aggregates fixed to the underside of the structural shell, an unusually clear separation of parts in automotive practice, where running-gear tends to be distributed all over the car, and mixed up with its structure.*

***3,** the power unit fits on top of the front axle aggregate, in the transverse position that has appealed to designers of front-drive cars all through the history of motoring, as in the German DKW models. The resultant unit, with all controls attached except the pedals (and their integration into the unit may be only a matter of time), could presumably be fitted to any suitable wheeled body as a kind of land-going outboard motor.*

***4,** in terms of styling, the bodywork of these 850 cc. cars is very frank about their internal arrangements and functions—except that there is no outward sign of the side-mounted radiator, which delivers its hot air into the near-side wheel arch. On the other hand, the management of external details and trim appears—as is so often the case with British cars—untidy and unconsidered: the raised "seam" that runs from the windscreen pillar to the front wheel arch appears to be simulating a large door, while that at the back, following the profile of the rounded rear quarter, breaks up what would otherwise be a compact form. The filler-cap and rear lights look as if they had been stuck on to the body as afterthoughts, rather than designed into it from the beginning.*



NEOLIBERTY: THE DEBATE

Reyner Banham's article Neoliberty, The Italian Retreat from Modern Architecture, *published in the April number of the* Review., *aroused, in Gillo Dorfles' words, 'immenso scalpore a Milano' although, in fact, the great uproar extended to other places inside Italy, and outside it as well. This resulted in a great deal of correspondence and editorial comment, of which the most combative or informative parts are reprinted below, with Dr. Banham's comments. First, however, a general misconception about the status of the article needs to be cleared up: many of the replies assume, explicitly or implicitly, that the first article in the* Architectural Review *is on every occasion an editorial. It is only such when unsigned, or when it appears over the signature 'The Editors,' but if it appears over the signature of a particular person, then it represents only that person's individual point of view. Obviously, the Editors are unlikely to publish opinions directly hostile to the established policy of the* Review, *nor do they normally publish texts that they do not believe to make a worthwhile contribution to a discussion of the subject concerned, but it is not to be assumed that they support, in detail, every proposition in any article made over a personal signature.*

Federico Correa

Dr. Banham's opinions, and the polemical tone in which they were expressed, were his own. They evoked responses that were equally personal, and equally polemical—thus, Federico Correa wrote from Barcelona:—

Can a serious architectural magazine, as I thought yours was, publish something (like) your article on Neoliberty? What's all this talk about Neoliberty anyway. . . . Form follows Function, the modern movement said, referring of course to valid function . . . form will change through functions that are new, or old but valid and newly reconsidered. These last, necessarily left behind when crossing the famous watershed, will be responsible for a similitude with past forms.

Nobody is trying to go back, in romantic revival, to good old 'borghese' days. But Liberty lessons in wearing and growing old nobly, ingenious use of simple economic materials in simple economic structures, and so on, had to fall upon the eyes that contemplate the ruining in five years of those beautiful clean-cut facades with sweeping reinforced concrete cantilevers faced in vitreous ceramic. These same architectural eyes will continue to consider architecture of the Art Nouveau period as the first of the modern, whether or not purely plastic-minded eyes consider Art Nouveau as the last of the old styles.

Importing that the intentions are just those of looking back, reviving the forms of a middle-class past, is lack of either insight or goodwill.

* * *

Reyner Banham comments: (*a*) the argument on weathering is one that has been used *ad nauseam* by the enemies (and some of the professed friends) of progressive design. To take purely Italian examples for argument's sake, the present condition of Terragni's work, faced in a variety of materials, makes nonsense of it, as does the parlous condition, a few years ago, of Moretti's Fencing School in Rome, faced in that 'reliable' traditional material, marble.

(*b*) it is not I that imputed a revival of the forms of a middle-class past, but Aldo Rossi, a professed friend of Neoliberty, and the same point was made, by implication, by Paolo Portoghesi. Where I appear to lack 'insight and goodwill' seems to be in considering such a revival to be a bad thing.

Sybil Moholy-Nagy

Mrs. Sybil Moholy-Nagy wrote in even stronger terms from New York :

Reyner Banham's article *Neoliberty* suffers from that oldest of British afflictions—condescension. If

anything this is an attitude typical of the 'borghese' middle-class through its ignorance of any contexts larger than the British viewpoint. The invective of 'infantile regression' with which the critique ends seems much more applicable to a man who indulged in a sort of hero worship . . . only to flip over into 'confusion followed hard on disillusion' when he fails to understand the direction in which his hero is maturing. (Remember Ruskin and the mature Turner) 'Queasiest and most cowardly,' 'wrong-headed and misguided' just aren't terms of architectural analysis where a whole movement is under scrutiny. . . .

What matters is that Mr. Banham has not the slightest inkling of the ideological basis of the Italian architectural revolution. This basis is a profound obligation toward Historical Continuity which is as embedded in the Italian mind as is a parochial insularity in the English. The whole history of Italian architecture is one of transitions and not of clashes, a supreme power to fuse thesis and antithesis—developed elsewhere—into a creative synthesis . . . it is a rhythm that goes from La Zisa to Assisi, from the castle at Volterra to the Villa Madama, and from the Piazza San Marco to Sant'Elia's many-storeyed city centre.

That a group of internationally recognized architects were willing to risk their standing with the CIAM fraternity . . . is one of the miracles of our undevout age; and it might be flattering but not true in fact that they are all young men. The justification of their revolution has been stated by Mr. Banham himself: that an architectural movement should be supported by the ideals and methods of its day. This contemporaneous obligation has forced on thinking architects, not only in Italy, the conclusion that we must 'start all over again' because the purely subtractive results of the identification of architecture and machine-cult has revealed itself as a romantic pipe-dream . . . is Mr. Banham that young not to remember the gangling stage of functionalism? . . .

It makes one squirm with embarrassment to hear the ARCHITECTURAL REVIEW plead tearfully for the preservation of Le Corbusier's masterpieces which are in a state of shameful disintegration because the architect was either too unskilled or too arrogant to bow to *time* and *impact* as the ultimate judges of his design. These responsibilities have been resumed by the Italian architects, together with an identity of enclosing form and enclosed space totally absent from 'out-and-out modern'. . . .

* * *

Reyner Banham: I feel quite undismantled by Mrs. Moholy's hatchet-job, since most of her energetic swings have missed the points of fact involved, viz. (*a*) Sant'Elia, the crucial figure in the twisted history of Italian modernism, is not a figure of synthesis, but of violent antithesis to the Italian tradition of compromise with the past. Has Mrs. Moholy actually read his *Messaggio*, with its contempt for piazzas and flights of steps, its hatred of the past and its traditions?

(*b*) Ernesto Rogers, the patron of Italian defeatism, is one of the last few people still trying to resurrect the corpse of CIAM. It is precisely the CIAM group of Italian architects, with their peculiar views on history, who have made Neoliberty possible, and their continued acceptance by the 'CIAM fraternity' finally disgusted the younger members of CIAM to the point of revolt.

(*c*) But of course I am too young to remember the gangling stage of functionalism, and so is everyone else under forty. I write of Functionalism as history, not as something practised by my personal friends and enemies. My disappointments with it are therefore different to Mrs. Moholy's, and that goes for the rest of my generation.

(*d*) And speaking of generations, I spoke also for my generation, not for myself, when I wrote of an ideal picture of Italy and subsequent disappointment with it. Italy has never been my hero, as Mrs. Moholy could find by looking back over earlier issues of the AR, and I, *personally*, am neither surprised nor suddenly disappointed at what has happened.

Figini and Pollini

From Italy itself came one letter from architects directly accused of 'retreating' in Dr. Banham's article, Luigi Figini and Gino Pollini, saying that they agreed in part with the argument of the article, but not where it held the whole Italian Modern Movement to blame, recalling that they themselves had attacked Neoliberty for its superficiality, proposing that—besides the 'style of the Retreat'—there was also what might be called the 'style of revision, or something analogous' and continuing:

We hold to be already acquired (by universal acceptance) the right of an artist to continual research (which could carry him beyond the positions he has already achieved) while we deny that, in homage to the idol of consistency, he has any duty to continue repeating or copying himself. But this does not mean that we share the iconoclastic position of those today who require the turning of a new leaf and a fresh start from the beginning. Nor do we believe the message of rationalism to be completely exhausted.

With the polemical avant-garde period finished, our cultural position today—unlike that of 1920–1940—induces us to make a considered re-appraisal, discriminating what is valid and vital from what has proven fallible. (The pressure of social values, the measure of the human scale as norm of construction, and the 'method' of squaring up to architectural problems, can still bind us to the experiences of rationalism.)

Turning to our own particular case, that is, to our building in the via Circo (1957) which has been presented in the AR as an example of the 'retreat' by comparison with another building of ours built ten years before (via Broletto, Milan, 1947), we wish to draw attention to the following:

The shape of the top eaves-cornice, which chiefly characterizes the building, arises from technical studies aimed at an efficient solution of the problem of defence against bad weather, achieved here by means of large prefabricated concrete tile slabs and joint-covers.

So, too, a predominantly technical reason accounts for the use of projecting blocks of solid porphyry, which serve better to secure the cladding panels of common porphyry paving-setts to the wall behind (an idea already used by us in a project of 1938).

Thus here, as in other parts of the structure, a greater degree of formal definition has been attained through technical research.

In this building too, full weight has been given to existing surroundings—an old urban nucleus of the city. This determined us not to allow the voids to prevail too much over the solids (thus limiting the use of large glazed areas) and to use materials and colours that more or less imitate those of surrounding structures.

* * *

Banham: In front of a document such as this, spoken from experience in terms of manifest honesty, I bow my head with respect, only wishing that the rest of the polemics had been of this quality. Nevertheless, the soft-option approach of the last paragraph will strike any English reader, and make him ask why the Italians, after some fifteen years of accumulating skill in the insertion of unashamedly modern buildings into historical environments, should now apparently lose their nerve, and start to back off into one of the most vicious of compromises (and one from which we have suffered so long in England)—'Keeping in Keeping.'

Ernesto Rogers—Casabella

The most energetic reply from an architect implicated by name as one of the 'retreaters' came from Ernesto Rogers, who devoted the whole of the first essay in *Casabella-Continuità* 228, to a personal apologia and rebuttal, considerably longer than Dr. Banham's original attack. Dr. Rogers was amongst those who believed the original article to be an editorial, and therefore devotes much of the early part of his text to general reflections on the ARCHITECTURAL REVIEW—not very flattering reflections—that are irrelevant to the main argument. However, his general reflections upon the REVIEW and its interior decoration (which he may care to revise now that our new offices have been illustrated) provoked him to the following comment:

Mr. Banham imagines that he has found (no doubt in the dust-laden drawers of that Victorian furniture) the magic key with which to unlock the floodgates of history and deviate its course towards his private aquarium of morays waiting to suck our blood.

One might say that he would find it much more reasonable to use an old Ford than a horse, because the Ford comes with the Machine Age, whereas the horse, obviously comes before. This comparison may be deduced from the rather conventional outlook of the whole article, which argues that, if there must be imitation, the architects who reflect de Stijl are to be preferred to those who adopt the Liberty manner . . .

However, the most important part of Dr. Rogers' rebuttal comes toward the end of his article, and is best given by quoting *in extenso*, the following paragraphs:

A man who cannot see straight deforms everything he sees: 'modern practised as a style since it could not be practised as a total discipline, as the literally hollow formalism of Terragni's Casa del Fascio at Como clearly demonstrates.' Hasn't Mr. Banham seen the coherence between form and function, and hasn't he heard of Terragni's struggle for his work in order to give (unfortunately deceived) a content and a moral form to Fascism. And why did Pagano, Banfi and Labò die if not because with their artists' discipline they could not help opposing the rules of the dictatorship?

He should have more subtly recognized what has often been observed by writers in this country, namely, the continual dramatic struggle of culture in general, with the contingencies of Italian society

(before, during and after Fascism); from this he should have inferred the difficulty of art itself to fit into life, the dialectical relationship, the tenacious duel of love, the incomprehension, the rejections and the redemption of this struggle. Then he might have sensed one of the most interesting aspects of our history, that by means of which Italian architecture, in its valid examples, is a moral act, and, at least implicitly, an instrument of political struggle: its successes are irregular, like the whole history of progressive tendencies in Italy, but for all that it is hardly to be despised and condemned.

After the war of liberation and the great period of partisan warfare, it seemed as if the world, Europe and Italy were rising to a definitely better life and we cherished these hopes, imagining that they were the truth, while afterwards we could not fail to perceive that they were only new Utopias. Since then the whole of progressive and enlightened Italian society has struggled to avoid the shoals of officialdom. And the fact that there sometimes appears to be an architecture which is more charged with feeling than with reason is not due to the retreat of architects—not on your life—but rather to a struggle upstream. One should see what happens in municipal offices, in the offices of the ministries, and how often those few who believe in art have to grit their teeth in order to move beyond the barricades.

It is by no chance that Ridolfi, Gardella, BBPR, Albini, Samonà, Michelluci and Piccinato, among the most ardent defenders of modernity, are no longer doing what they used to and for this very reason are coherent. Hasn't Mr. Banham wondered why? One can hardly believe that these persons and many others have all and at the same time become so irresponsible as to renounce the victories which they have so laboriously achieved. Their strength lies in the very fact that they understood the Modern Movement as a 'continuous Revolution,' that is to say, as a continuous development of the principle of adhering to the changing content of life.

Gradually, the thematic material was enriched and as a consequence the requirements became more subtle; thus, too, the formal results became more difficult, because they tried to include greater and greater numbers of propositions; the enlargement of the range of architectural problems and the immediate result of critical thought, the historical revision of all movements and styles, especially those nearer to us in time, which, owing to the normal opposition arising from the clash of generations had been distorted.

One understood better even (and why not) the Liberty style, in which there were energies still to rescue and canalize.

That the Liberty style should not only be considered in its historical framework, as the ancestor of modernism, but in the light of its own values, is moreover so necessary an observation that as a young student I based a thesis on it for my degree.

What is there to be so frightened about?

There is no doubt that we should look at past experiences (all of them), of course, without allowing ourselves to be seduced by them, as unfortunately happens to someone—and I am the first to admit that.

However slow and elaborate the complex process of review, it has been misunderstood by those less experienced in the field: they have received a shock, but it must be acknowledged that this process may have made even the more experienced overlook a number of cultural components (such as technology) to which they had devoted much more attention at other times. But progress is the result of choice and suspension of judgment, which at any moment may be guilty of incompleteness. Progress is paid for in errors, but I am convinced that the few dangers that Italian architecture risks are quite evident to us, even without the arrogant prodding of Mr. Banham, the caretaker of the Frigidaires, who really believes that 'the domestic revolution . . . began with electric cookers, vacuum cleaners, the telephone, the gramophone and all those other mechanized aids to gracious living that are still invading the home and have permanently altered the nature of domestic life and the meaning of domestic architecture.' We may as well add the mixer, which we can use to mix a cocktail of all the other revolutions, the 'milestones' of which were according to him, the 'Manifesto of Futurism, the European discovery of Frank Lloyd Wright, Adolf Loos's *Ornament and Crime*, Hermann Muthesius's lecture to the Werkbund Congress of 1911, the achievement of fully Cubist painting, and so forth.' All this cocktail needs is a pinch of salt.

* * *

Banham: It would be tempting to make fun of Dr. Rogers—'have to grit their teeth (stringere i denti).' What a terrible thing for grown men who survived the Partisan period! But seriously, the thing that impresses me about Dr. Rogers's apologia is the number of points on which he agrees with me. He and I, as far as I can see, are saying exactly the same thing about Terragni and the Casa del Fascio, but he is sympathetic, and I am not, so that, when he calls up the spirits of the martyrs, I—and many another Anglo-Saxon—merely demand how he dares couple the names of Banfi and Labò, political martyrs of the first rank, with that of Terragni who—if we are to trust the testimony of Giulia Veronesi—did not renounce Fascism till his mind was deranged. However, for a full scale response on purely Italian questions, I would like to refer the reader to Bruno Zevi's comments.

I would, however, like to take Dr. Rogers up on the question of my *key*. I did not discover it in my office, but on that very railway line from Milan to Como. There, working on the problem of Sant'Elia and of Futurism, on the territory in which both were born, I was forcibly struck by the way in which the Italians, more than any other nation except the Americans, have appreciated the possibilities of the small, domesticated and personalized machinery that came in around 1910. Marinetti was the first 'intellectual' to put this appreciation into words, and thus opened the eyes of a generation. Dr. Rogers, like many other Italians, has his view of the historical importance of the *young* Marinetti and *early* Futurism, obstructed by the image of the academic fool that Marinetti became in middle age. In 1910, Marinetti was a figure of world significance in the foundation of twentieth-century sensibility—a sensibility that Dr. Rogers, still urging me to read Ruskin (in a paragraph not quoted above), seems not to share.

Bruno Zevi—l'Architettura

The observations of Bruno Zevi, to which reference is made above, have been numerous and various. In *l'Architettura* 47, 1959, Zevi directly attacked Rogers for citing the 'martyrs' in his own support, and said further:

. . . the Milanese have answered evasively, accusing Reyner Banham of being an 'advocate of refrigerators.' We do not think that one can fight refrigerators with vague generalities.

* * *

Banham: It sounds as if the war between Rome and Milan has broken out again.

* * *

Zevi's main statement on the subject of Neoliberty had been made in the previous issue of *l'Architettura*, under the title *The Andropause of Modern Italian Architects*, and the following is the English summary given in the margin of his editorial:

In the April issue of THE ARCHITECTURAL REVIEW, Reyner Banham has launched a violent attack against the recent trends in Italian architecture—the 'neoliberty,' the 'signorile' and the 'casalingo,' which he considers as many symptoms of 'infantile regression.' We agree, in fact we are grateful to Banham for having credited our magazine with having systematically fought against these forms of decadence, which have occurred particularly in Milan and Turin. There is no question that the Rationalism of the Thirties is in a crisis, but this cannot be helped by turning back to the *Art Nouveau*. If the alternative were between the *Art Nouveau* and the Bauhaus, we would definitely choose the Bauhaus. Every evolution of modern architecture, including the 'organic' one we advocate, starts from the Bauhaus experience. We only have two objections to raise to Banham's article: (1) to publish the works of the masters of the *Art Nouveau*, as we are doing, does not mean to invite people to copy them. . . .; (2) the 'neoliberty' movement is rather limited, a small episode in the story of modern Italian architecture. Banham was right in attacking it, but he should not overemphasize its importance. It is a 'lapsus' more than a disease.

* * *

Banham: I thank Dr. Zevi for support from so distinguished a quarter, but I beg to differ on the last two points. Neoliberty appears to me to be only one symptom of a general disease afflicting Italian architecture—other symptoms can be seen, for instance, in Rome, on the Monte Parioli, but have not been tagged with an 'ism.' As for the publication of works of the masters of *Art Nouveau*—if it is only a matter of revaluation, why is it proceeding in such minute detail, month after month, building by building (five articles already on Mackintosh) in a plethora of emotive words like *marvellous, splendid, most precious page of modern architecture, miraculous, passionate*?

Bruno Zevi—l'Espresso

From the point of view of non-Italians, however, there is little doubt that Bruno Zevi made his most valuable contribution to the Neoliberty debate in *l'Espresso*, the weekly paper that has been described as 'an Italian *New Statesman* with *Life* magazine pictures.' In the issue for May 24, 1959, he wrote one of his regular columns on architecture, giving it the title *Torniamo al Liberty* (Back to Liberty), and drew

attention not only to Banham's article, but also to a recent study of south Italian *Art Nouveau* by Renato Defusca (*Il Floreale a Napoli*), and deduced (from a reading of the latter) three motives towards a revival of *Art Nouveau* in Italy. He described them thus:

(1) An historical pressure. The Modern Movement reached Italy fifty years late compared with other European countries. Hence the solutions were applied before the problems had been tackled, and modernism entered the building scene only to make it squalid. We welcomed functionalism without having lived out its precedents, the Arts-and-Crafts revival, nineteenth-century engineering, Art Nouveau and proto-rationalism. It is all the more logical therefore to try today to rediscover and revalue our few works of the beginning of the century that reflect—in however faint and provincial a manner—the grand currents of renewal.

(2) An opportunity for critical revision. The Rationalists overabused the nineteenth century and the *floreale*, feeling no need to distinguish them from their later imitators. . . . The masters of Liberty are artists of the very first rank, to be classed not as simple forerunners of the modern movement, but as protagonists of one of its most fruitful periods.

(3) A nostalgic tendency. Basically, these our grandfathers did less harm, even while plastering their architectural pastry with whipped cream, than our fathers and elder brothers. Their palaces and villas, in spite of their decorative affectations, are less sickening than the pseudo-modern suburban quarters of skyscrapers and stridently coloured constructions currently in fashion. They reflect an illusion, pathetic but legitimate, of early Italian capitalism intent on de-provincializing the country.

These three motives . . . could easily become twisted to support the rise of a Neoliberty. And so much, precisely, has happened in Milan. From such false reasoning descends . . . the infantilism of sudden cultural conversions, the artistic and—above all—the human decadence of which Neoliberty is the most obvious symptom. . . . In a culture that tires of ideas and first principles even before they have been realized or made concrete, and suffers a fever of originality and artificial vitality, it was logical for the Rationalists to feel an urgent need to surpass themselves—even by going backwards. They braved out the difficult times, when a desire to build modern meant going hungry . . . but now prosperity has corrupted them.

* * *

Banham: No comment needed; except that if Zevi, who is an Italian, feels moved to say such things, which are what I said only more so, then perhaps I am not so insensitive to the subtleties of the Italian situation as Rogers and others claim I am.

Piccinato and Quillici

Finally, four comments from above the battle, so to speak, deserve note. A group of architectural students in Rome, led by Giorgio Piccinato and Vieri Quillici, took the opportunity to send a manifesto, and observed:

. . . Latest Italian 'performances' that you rightly criticized in AR . . . clearly prove the unprogressive background of our post-war architecture. Only in taking up the spirit of the modern movement do we think it will be possible to get out of our present situation. To see that the AR is in accord with these ideas has been very agreeable to us. Our heavy problems of building and planning can find no solution without a deep criticism of (architecture's) ethical meaning.

Cesare Brandi—Corriere della Sera

The opinions of the Italian equivalent of the 'Top People' who read *The Times*, were expressed in an article by Cesare Brandi in the *Corriere della Sera* for July 10, 1959. Since this was written for a non-specialist readership, it was mostly taken up with explaining the issues at stake, and hoping in an avuncular way that Reyner Banham's 'Lavata di Testa' had been applied at the right moment to call younger Italian architects to order. But it is worth noting, in passing, that Brandi alone appeared to agree with Banham that *Art Nouveau* was the last of the old styles, not the first of the new.

Giovanni Bernasconi—Rivista Tecnica

From the side-lines, the well-informed Lugano magazine, *Rivista Tecnica* (8, 1959), made a general survey of the current bad press for Milanese architecture, back to, and including the *Casabella-Architecture d'Aujourd'hui* polemics of 1957, and was the only overseas commentator to recall the ARCHITECTURAL REVIEW'S earlier strictures on Milanese revivalism, such as the speculation on the inspiration of the *Torre Velasca* which appeared in 'The Exploring Eye' (AR, November, 1958). Giovanni Bernasconi concluded his survey with the observation:

. . . and, certainly, contemporary Italian architecture has no need for research into Dutch Expressionism . . . the eclecticism of Berlage; Italy has *altro cielo e altri colori*.

* * *

Banham: Readers may remember Sig. Bernasconi as one of the most energetic defenders of the reputation of Antonio Sant'Elia, and his observations are—unlike those of the Neolibertarians—fully in accord with the tradition of progressive design in Milan that Sant'Elia founded, and Eduardo Persico confirmed.

Crespi/Grisotti—Architettura Cantieri

The most truly Olympian comment, however, came from *Architettura-Cantieri*, the Milanese magazine that first raised the alarm at revivalist tendencies in North Italian architecture. In its No. 21-1959 it gave overwhelming proof of its concern with facts, rather than polemics, by printing a complete translation of Reyner Banham's article—complete even to the footnotes. The tone of its accompanying comments (either by Raffaello Crespi or Marcello Grisotti) suggests that *Architettura-Cantieri* is not very impressed with Neoliberty, which it accuses of missing the structural rationalism that was the true strength of *Art Nouveau*, nor with Dr. Banham whom it accuses (as usual) of missing the subtleties of the Italian situation and of not attending to the strain of continuity during and since the rationalist epoch in Italy. Nevertheless it hoped that the 'already celebrated article' would put Italians

. . . on guard against the ills that can arise from our 'tendency to tendencies,' trying always for 'critical vindication,' or forcing on the natural reaction of the young by offering them cultural alibis and absolution, rather than a serene and severe attention that would be, in truth, more generous.

To run a 'tendency' magazine is doubtless amusing and frightfully *engagé*, but risky, for all that. There is a danger of incurring fillipics that are not entirely (like those of Banham) merited if gratuitous categorizations are instilled in the reader, if criticism and polemics are confounded.

* * *

Banham: Agreed. A plague o' both their houses, Roman or Milanese. Let's get back to architecture.

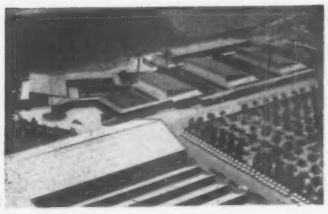
WORLD

a monthly review of outstanding buildings abroad, and new developments in world architecture.

Aluminium Prize Structure

Now that the fanfares and the floodlights have died away, it is possible to look back on the Reynolds International Aluminium Architecture competition, and reflect a little on the prize-winning scheme by Cesar Ortiz-Echague. The building in question is, in fact, the complex of halls linked by covered ways, 1, that provides canteen, social and visitors' amenities for the factory that builds FIAT cars under licence, just outside Barcelona. Architecturally, it is a welcome sign of continuing progressive thought in Spain (as was the Spanish pavilion at Brussels, *see* AR, August, 1958) but it also has a curiously English air—as it were, a cross between our post-war schools and the early incursions of British modernists into tropical architecture. This similarity, 3, pervades even the interiors, where the lattice roof-beams, 2, have an immediately familiar look to British eyes, even if the Bertoia chairs do not.

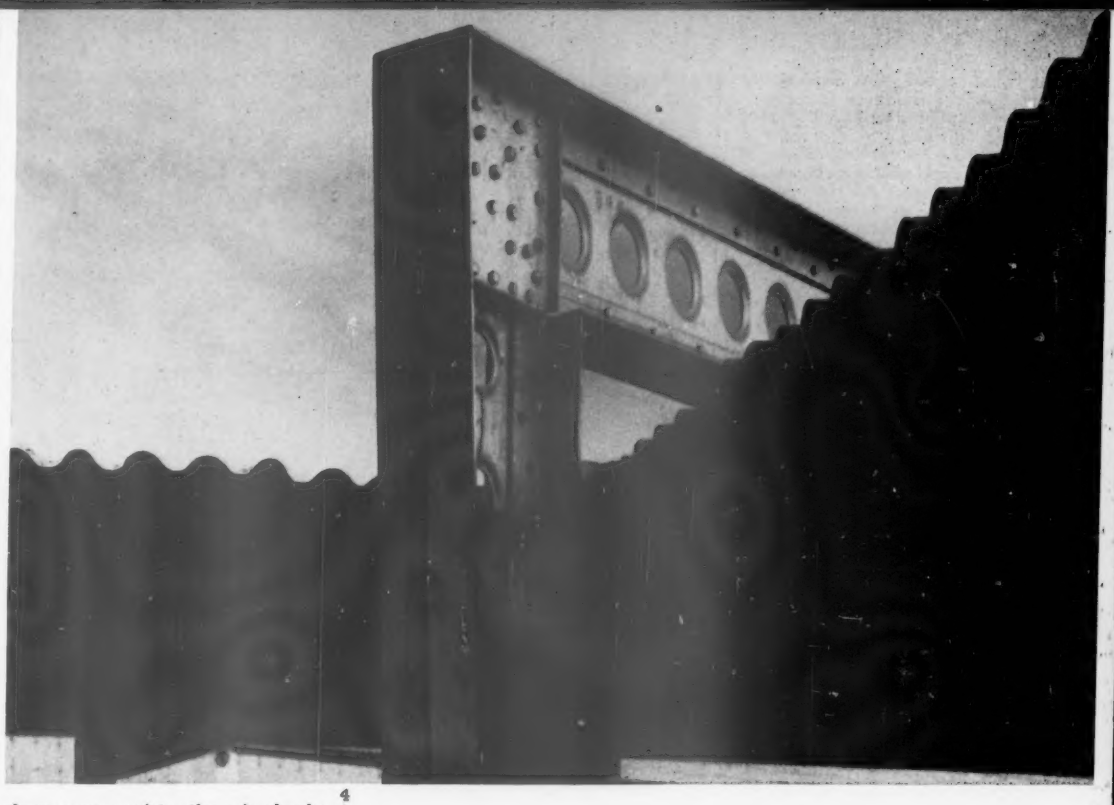
Here, of course, the resemblance is due largely to the techniques of construction and yet these techniques are, in fact, the least familiar part of the whole. We have almost as little experience in England of fabricated aluminium structures of this kind, as the Spaniards had when this building was put in hand—in their case, none, since this was the first in Spain. The detailing bears witness to the experimental nature of the work: a sophisticated, Prouvé-like use of pierced webs and tapered sections, married to what appears to be rather happy-go-lucky riveting, 4. However, if this riveting might alarm some purists, there is clearly nothing wrong with it structurally, and the frame and roof have successfully weathered two winters of Barcelona's boisterous sea-side climate.



1

3

2



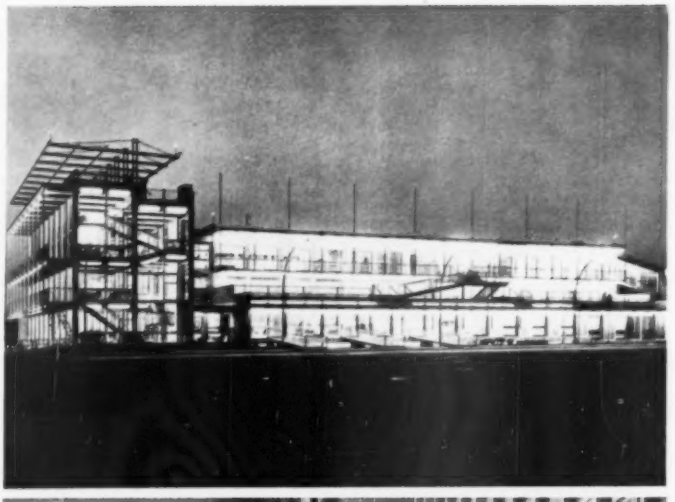
4

5

Nya Ullevi Stadium

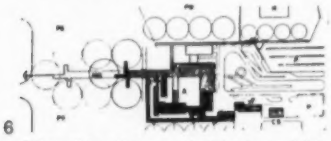
A 55,000-spectator stadium is a sizable one anywhere, but in Sweden it is immense. Yet Nya Ullevi, in Gothenburg, has more than its size to recommend it. The designers, Fritz Jaenecke and Sten Samuelson, have departed completely from the symmetrical, formalist orthodoxy that still circumscribes many stadium designers, and attempted a 'functional' form that distributes standing and sitting accommodation around those parts of the perimeter where it is most in demand—*not* around the curved ends behind the goal-posts or where most cinders fly from the speedway. The result is a lopsided plan because seated spectators occupy more depth than standing ones,

but what makes this asymmetry immediately striking is the consequence of roofing it, 5. The roof rises and falls like a roller-coaster in order to take up varying depths of stands of approximately the same angle of rake, and this increase in depth becomes so marked on the 'seats' side that normal cantilevering (sufficient elsewhere) has to be reinforced by wire-bracing from above, the two pylons that provide the anchorages also serving the more conventional purpose of carrying floodlights.


7

Jet-port for Milan

Many an air-traveller to or from Milan must have occupied his mind with puns about 'thinking ill of Malpensa' as he kicked his heels in what was, until recently, one of the slummiest airports in Europe. Now, however, in preparation for jet services to Italy's second city, Malpensa is in course of complete renovation and rebuilding in a local variant of the glass-and-steel style, 7, increasingly (and justifiably) favoured for airports. The new buildings, designed by Vittorio Gandolfi, shown in black in 6, are the first phase of an extensive scheme, intended ultimately to handle medium sized air liners on


6

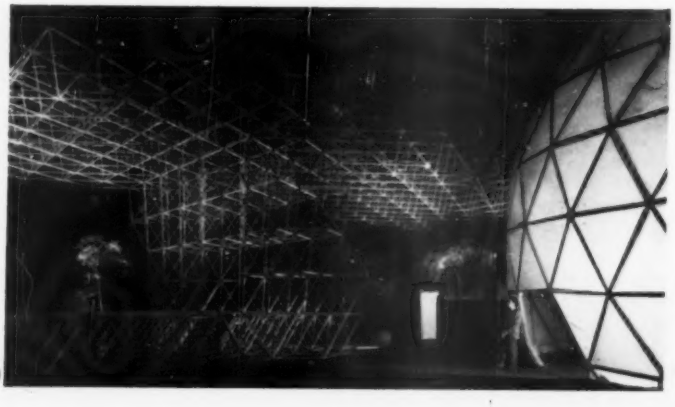
either side of the main block, and big jets from a projecting 'passenger finger' shown in two phases of extension in the plan. The interiors, largely the work of Gabriella Gandolfi Albertazzi are, as might be expected, in a considerably lightened-up, and straightened-up, version, 8, of the super-de-luxe airport style established at Ciampino, the airport for Rome. The result adds up to a terminal building that will certainly be compared to Gatwick (AR July, 1958).

8

9

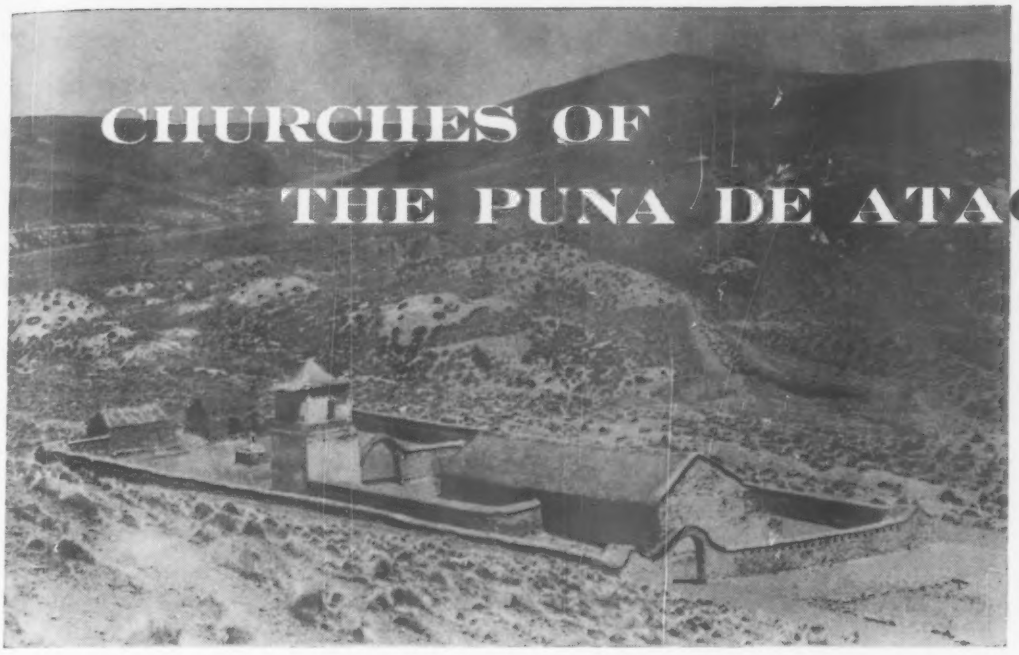
Octet on West Fifty-third Street

'Although he is not directly concerned with aesthetics,' as Arthur Drexler's catalogue-introduction admitted, Buckminster Fuller has recently been given an exhibition at the Museum of Modern Art, New York. The exhibits wrought a massive transformation on the familiar landscape of Philip Johnson's sculpture-court, 9, behind the museum (cf. AR, Nov., 1959, p. 253), and included the MIT rigid radome, built up from plastic dished units bolted edge to edge, a discontinuous compression strut, now known as a tensegrity strut, derived from the work done for Fuller by Kenneth Snelson at Black Mountain, and a large cantilevering structure with overhangs of sixty feet one way (to the right in 10) and forty feet the other, toward the back wall of the museum. This was one of the largest demonstrations so far of the Octet (octahedron-tetrahedron) truss employed to create flat surfaces of wide extent, and invites comparison with the flat trusses of Konrad Wachsmann's B36 hangar (AR, *World*, August, 1955). The comparison will show that, on analysis, the Fuller Octet ventures much further into the deep waters of three-dimensional geometry—Wachsmann's structure depends on a square grid in plan, and thus gives a tidier outline; Fuller's, based on the tetrahedron, gives parallel sides at 60 degrees between one set and another, and thus a wavy edge when used to make rectangular forms, 10, but should turn out much lighter. Comparisons are virtually impossible, but the fact that this Octet truss with its span of over 100 feet comes in at under four tons, suggests that as a structure type it must have an inherent weight advantage.


10

PAUL DONY

CHURCHES OF THE PUNA DE ATACAMA



If there is an architecture where the Lamp of Sacrifice (as Ruskin called it) burns bright, it must surely be that of the churches of the high and inhospitable Argentine face of the Andes, built and maintained with the utmost fortitude by both priests and laity. The twenty-odd that still survive are described and illustrated by Paul Dony in the article that begins below.

In 1542 Cristóbal Vaca de Castro, who assumed the government of Peru after the assassination of the Conqueror, Francisco Pizarro, decided to send out an overland expedition to the River Plate. At that time, the whole of the Inca empire, including the old capitals, Quito and Cuzco, had fallen into the hands of the Spaniards. Both Lima and Sucre (first known as La Plata or Charcas) had been founded, whereas at the other end Buenos Aires, tentatively established in 1536, had been abandoned for Asunción del Paraguay after five years, only to be refounded in 1580.

Two hundred well-trained men left Charcas under Diego de Rojas and started due south, following the ancient Inca road across the high plateau and accomplishing the historic first 'entrada' into the territory known as El Tucuman—to-day's north-western provinces of Argentina: Jujuy, Salta and Tucuman. Rojas died on the way, but some of his companions eventually reached the Paraná river.

After traversing the highly eroded table-land that stretches south of Potosí, the old trail (Camino de los Incas) runs along the eastern slopes of the Andes, descending into the plains somewhere west of the present city of Tucuman and, probably for reasons of safety, keeping clear of the Humahuaca Valley that was reconnoitred later and then became the main link between Bolivia and Argentina. The country—the Puna de Atacama—is bleak and desolate, windswept, stony and treeless, practically the only growth being a low, blackish shrub ('tola') and an occasional cereus. It is so thinly populated even now that, without coming across a single dwelling, one may cross distances of thirty miles such as the steppe appropriately named Campo de la Paciencia. Silence is impressive, and even the human voice loses its timbre owing to the high altitude.

The lower route, climbing northwards from Jujuy to La Quiaca through the Quebrada de Humahuaca, is sparsely dotted with tiny villages, but the effect of the scenery is enhanced by rugged and colourful mountain ranges closing in on both sides until the plateau is reached a short way off the Bolivian frontier.

The churches with which this brief survey is concerned, scattered along both routes, are all included within the former boundaries of the Argentine province of Jujuy. From south to north, over a distance of 180 miles, the altitude rises from 4,000 to 10,000 ft. The Tropic of Capricorn crosses this region more or less half way between the city of Jujuy and the northern boundary: the villages of Huacalera, on the valley road, and Susques, on the Inca highway, lie a couple of miles off it.

Franciscan and Dominican friars probably came down from Peru as early as 1550. A few Jesuits followed about 1585, joined later by a fresh group proceeding from Brazil. Founded in 1593, the city of San Salvador de Jujuy gradually became an important centre, second only to Salta, on the muleteers' trade route to the mining districts of Potosí. In his itinerary from Buenos Aires to Lima ('El Lazarillo de Ciegos Caminantes,' 1773) Concolorcorvo gives a vivid picture of the perils and amenities of the road and describes its many 'postas' or relays. Travel was active through the valley and it is easy therefore to account for the establishment and maintenance of small places of worship all along the Quebrada. Not so, though, in the Atacama desert. Nevertheless, not one of the lonely Andean villages along the Camino de los Incas was neglected and, in the course of two centuries, the padres, with uncommon fortitude, raised chapels and oratories wherever they could rely on their being taken care of by the dwellers, their own visits being few and far between. It should be borne in mind that, up to the present day, the number of parish churches in these provinces is exceedingly small and limited to the bigger centres; most of them are modern constructions, devoid of any architectural interest. The country chapels are visited once or twice a year by a priest, who then administers at one sitting all the sacraments that have been left in abeyance: baptisms, confessions, Holy Communion, marriages.

Distributed over an area three times as large as Wales, some twenty of the old structures still exist. Most of them were built in the eighteenth century, a few belong to the second half of the seventeenth. Probably one out of every three remained unknown to scholars and artists until thirty years ago. In most cases, documentary evidence is lacking as to their erection and the restorations they have undergone, so that any attempt at a chronological classification is impossible. Sometimes a wooden lintel or a bell has a date carved or embossed on it; this, however, is seldom an indication of the building's age, since such parts have often been re-used from one to another, owing to the difficulty of securing new ones for lack of raw material or transportation.

Utmost simplicity is the rule. Of necessity, without architects except the self-trained padres, and without skilled workmen, technical problems had to be reduced to a minimum. In fact, the first country chapels—many of them superseded later by somewhat more elaborate structures — were of the 'rancho' type: rough rectangular huts, only larger than those used as dwellings. Construction was elementary: adobe walls (up to 6 ft. thick), packed earth floor, double-slope roof with coupled rafters. A tiny lateral sacristy was added at the far end and a squat, square and bulky tower built on one side of the front. The plainest arrangement consisted of a narrow external staircase applied against the nave wall and leading up to the belfry. (Antofagasta de la Sierra, 7, now pertaining to the province of Catamarca.)

Whereas in New Mexico, where evangelization was massive, the friars at once started raising churches of ambitious size, designed to accommodate large crowds, the exceedingly thin population of the Andes provinces only required chapels of very modest proportions. But a more capacious and refined type slowly evolved out of the most primitive, though without ever losing its peculiar character of intimacy.

The single-nave plan was invariably adhered to and stress should be laid first on some negative features prevailing over the whole district: there is no indigenous or 'mestizo' decoration of any kind, there is no attempt ever to develop anything like a lateral façade, openings are few and small, bell-gables ('espadañas')—so abundant and graceful in the more southernly provinces—are absent, and so are outer galleries.

The first enrichment very likely was the choir-loft ('coro alto'), a wooden platform spanning the nave above the doorway and directly accessible from the belfry staircase. When the flanking tower rises higher, with a hollow core and an upper story to lodge the bells, it is commonly entered at ground level from the front and either a ladder or an inner staircase gives access to both the belfry and the choir-loft. Cochinoca and Coranzulí have twin towers. Isolated towers, as at Rosario de Coranzulí and Uquía (a Jesuit halting-place, one

day's march from Jujuy) are exceptional. Sometimes the tower has three stories, the cubic masses of which, superposed and set back, are relieved by unsymmetrical fenestration; but they certainly are no improvement on the primitive, sturdy, overpowering bulk of the tower at Acoyte (8—now pertaining to the province of Salta).

Probably the most striking feature of these Andean churches is the 'soportal,' a double-sloped porch obtained by simply extending over the entrance the roof's framework,

1

which rests on the protruding nave-walls (Huacalera, 3; Tumbaya, Yavi, Susques, Yruya).

Either located in front of the church or surrounding it, the 'atrio' is a walled-in enclosure of large size. Though also to be found in some Quebrada villages (Uquía, Purmamarca), it is typical of the Altiplano or high plateau and is an element of great distinction and beauty. With its arched doorways and the simple but effective openwork decoration of its walls—the upper courses of adobe-bricks being placed obliquely on their smaller sides so as to form a row of pierced chevrons under the thatched covering—the 'atrio,' extending its smooth horizontals across the plain or against the arid, unshapely background of a nearby ridge, turns the sleepy village church into a harbour of peace and meditation. Sometimes (Rosario de Coranzuli, titlepiece) there is a double enclosure, sometimes an outer and an inner courtyard as in Casabindo, 2, where the outer, larger one has four cul-de-four altar stations engaged in its walls, two facing east and two facing west. These are not open chapels ('capillas abiertas' or 'posas') as in Mexico, where mass could be celebrated outdoors whenever the congregation exceeded the church's capacity. The Andean open-air altars are actually 'sitiales' wherein to rest the monstrance in which the Host is carried in procession: the French word 'reposoir' conveys the idea clearly. A perfect example is Susques, 3, 11, where four 'sitiales' are built against the walls in the corners of the square atrio enclosing the chapel. They are disposed in such a manner that every one of them faces the procession as it liturgically moves round the court in an anti-clockwise direction. Such an arrangement was traditional in Spanish cloisters and the monks, who would have met blank walls if they had walked clockwise, encountered decorated niches or

3

fountains when moving in the other direction; very few examples have been preserved intact, but one is to be found in France in the fifteenth-century cloister of Cadouin (Dordogne).

In some places the cemetery adjoins the atrio, elsewhere it is enclosed in it (Casabindo): diminutive clay monuments, 4, handmade and pathetic, are built on top of the tombs; crosses are placed on them on All Saints' Day, until which time they are kept within or near the church.

Interior ornaments and fittings are generally unassuming and of a poor artistic quality. Altars are often built in. Costly wooden retables (there is a fine one in Yavi) were neither easily obtainable nor advisable in these lonely parts: in case of aggression, the padres had to collect their valuables quickly and this was easier if they simply lay in niches cut in the wall; there was also less danger of fire.

Of exceptional interest are the magnificent pulpits in Jujuy cathedral and at Yavi (the Marquess of Tojo's seat). Though belonging both to the Cuzco school of woodcarving, the former is by far the more significant. Jacob's ladder is figured on the banisters and the Evangelists on the panels of the bowl, but curiously enough two of the attributes are inverted—St. Lucas appearing with the Lion, 10.

In Uquía and Casabindo, the walls of the nave are hung with late seventeenth-century paintings, quaintly representing winged angels dressed up and armed like musketeers, so-called 'ángeles caballeros,' frontispiece, page 302.

Clay and adobe are used where

4

church furniture would be too expensive, as in the case of a low bench ('poyo') often running along the inner wall (Casabindo); touching in its plainness is a small confessional at Antofagasta de la Sierra, made out of a low seat between two rough adobe partitions, each pierced with a tiny latticed opening.

The giant cactus, or cereus ('cardón'), replaces timber in many instances: sawn into boards or logs, it yields an exceedingly useful and decorative material, somewhat soft and pulpy, whitish, with curious veins and innumerable rows of holes. Where wood is specially scarce, as in the Puna de Atacama, 'cardón' is turned into light beams, like those supporting the choir-loft at La Cueva, or rafters, doors and panels. Confessionals are built of it at Humahuaca, where a local 'indústria del cardón' is being developed. Both at Susques and at Casabindo the pulpit is made of this material: a whitewashed bowl for the former, a balustered balcony for the latter. A short distance from Humahuaca, the so-called Santa Bárbara Tower, now in utter neglect, has a door, 9, entirely made of cereus boards fastened by straps of undressed leather; when the author and his wife opened it, they had a surprise: a skull lay behind it. For centuries, raw leather has been used in the northern provinces instead of nails or wire to tie rafters and beams together; the straps are fastened when wet and will last for ever.

When Ruskin, a hundred years ago, wrote of the spirit that offers labour and time because they are precious, when he said that what matters is 'not the gift, but the giving,' he might have been thinking of the humble Andean sanctuaries. For, in spite of their poverty, all of them disclose some effort towards beauty, however awkward and modest. The string courses and attempted blind arcade at La Cueva, 5, possibly illustrate this better than any other example. But there are many more details, the charm of which is increased by the coarseness of the material and the 'naïveté' of the treatment: 'guardapolvos' or dripstones (6—Yavi, here designed to keep off dust instead of rain),

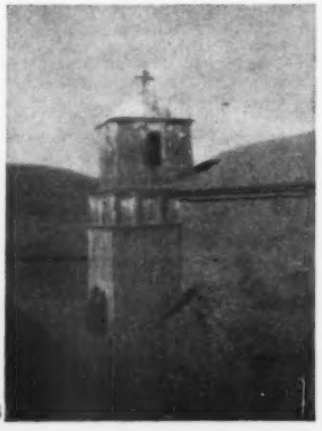
6

projecting beam-heads over a doorway (Santa Victoria), indented and carved lintels (Huacalera, Casabindo, Yavi). The 'Lamp of Sacrifice' is still burning high up in the Andes.

Such enrichments are all the more lovely as the materials employed are in fact reduced to three: clay (stone, with the barrel vault, has been used in Casabindo only), cereus and, for thatching, a kind of reed called 'totora.' Nature has nothing else to offer. Andean architecture is part of the soil and vigorously attached to it. The mud-coloured villages, crouching low under the icy winds, fiercely hold their own against the desert—the desert that starts right beyond the last house's backyard. But the minute a rancho or a chapel is abandoned, as soon as fails the care of man and the breath of life, it crumbles down and breaks up into dust.

Adobe walls, a thatched roof—possibly covered up with mud ('torta de barro')—a touch of whitewash here and there: the village merges completely into the surrounding scenery. How could one talk of style? In the Andes, architecture is ageless. And, as in the Arab world, there is only one style: the same ever. 'Celui de toujours,' said Jérôme et Jean Tharaud.

2



5

7

8

7, the belfry of Antofagasta de la Sierra, with an external staircase.
8, the tower at Acoyte in the province of Salta.
9, the door of the Santa Barbara Tower is made from boards of giant cactus fastened by leather straps.
10, the carved pulpit in Jujuy cathedral.
11, the bell tower at Susques.

10

11

THREE SECONDARY SCHOOLS IN THE WEST MIDLANDS

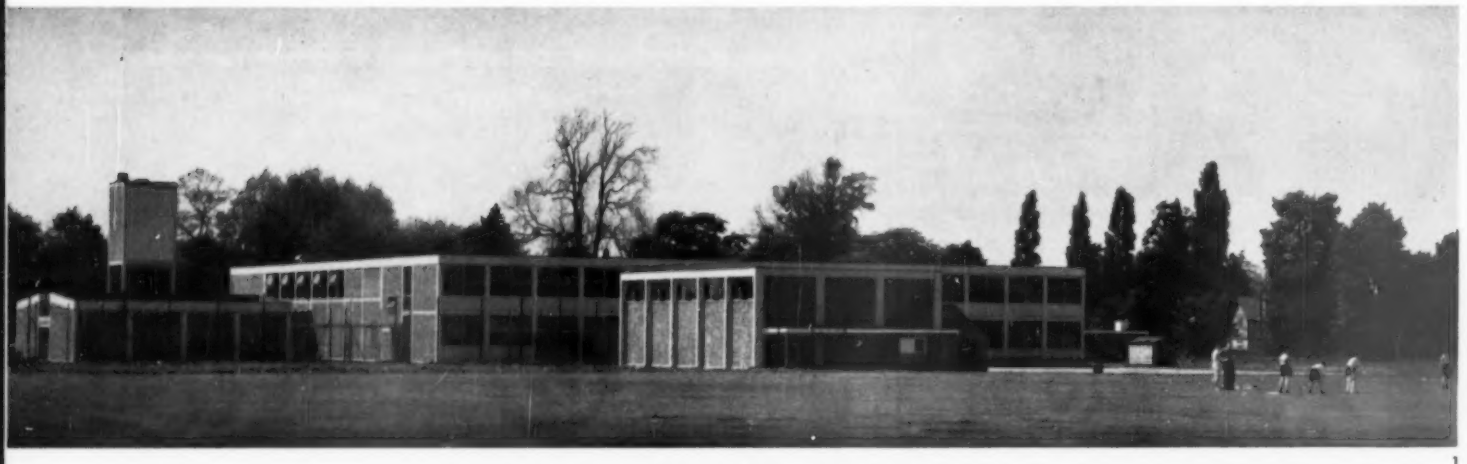
ARCHITECT: FREDERICK GIBBERD

These three schools, two in Worcestershire and one in Warwickshire, are all in rural surroundings and all three are comparatively small for secondary schools.

The two Worcestershire schools, at Kidderminster and Upton-on-Severn, have level sites and are compactly designed around garden courts, to leave the existing environment as undisturbed as possible. Both schools are two storeys high with the ancillary buildings, such as workshop blocks, single storey. In the larger of the two, at Kidderminster, the single storey blocks are arranged as projecting fingers around a main block.

The school at Henley-in-Arden has a much more irregular site, both in its contours and tree planting, and is, therefore, more irregular in plan form and silhouette. The central teaching block is three storeys high, to be in scale with the existing trees and to overlook a small valley to the east.

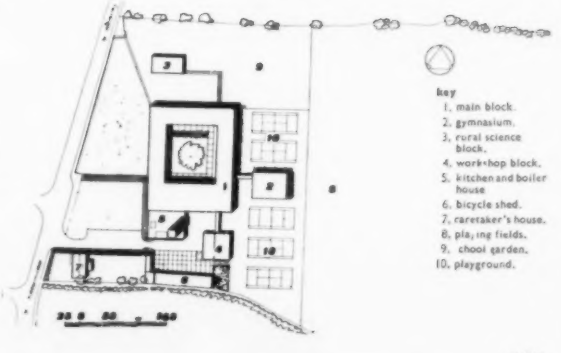
All three schools are frame structures. Upton-on-Severn has a steel frame with infilling panels on the ground floor of grey concrete blocks and rendered and painted panels at first floor level; the Kidderminster school has a reinforced concrete frame with timber framed panels of glass and vitreous enamelled sheet steel. The Henley-in-Arden school has a steel frame cased in concrete, painted black which, together with the red brick infilling walls, gives it an affinity with the local half-timber tradition.



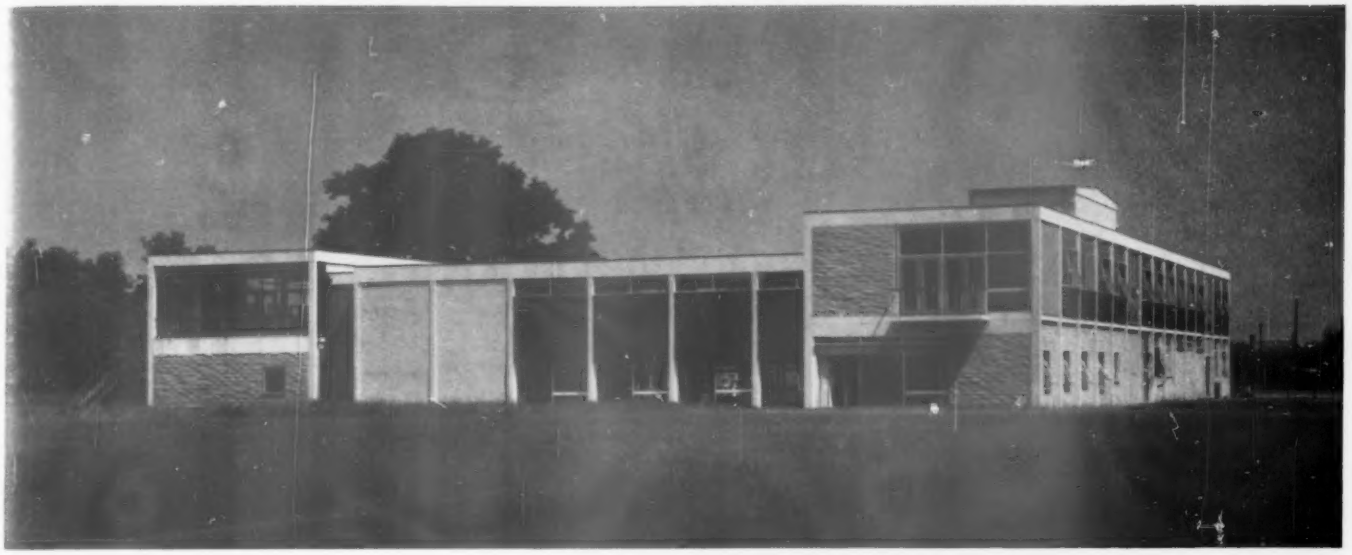
1

SIONHILL SCHOOL, KIDDERMINSTER

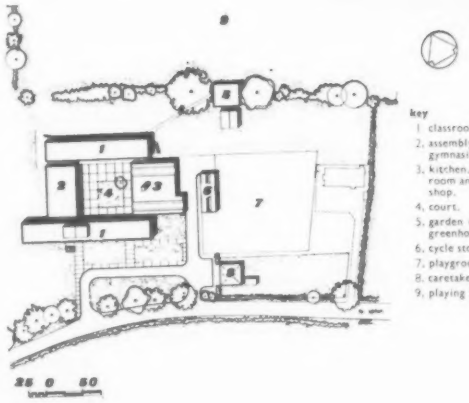
partner in charge: A. E. Kelsey



1, *a view from .ne playing fields on the east, showing the main block with the gymnasium in the centre and the workshops on the left.*



2

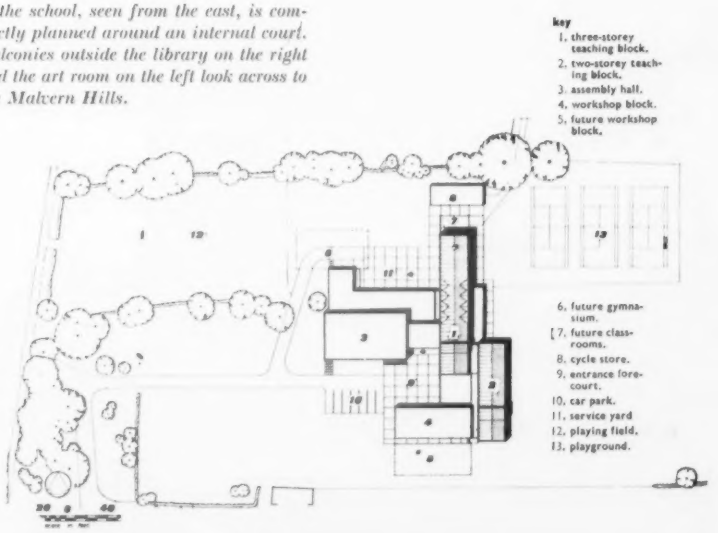


THE HILL SCHOOL, UPTON-ON-SEVERN

in association with: L. C. Lomas, County Architect

partner in charge: A. E. Kelsey

2, the school, seen from the east, is compactly planned around an internal court. Balconies outside the library on the right and the art room on the left look across to the Malvern Hills.



HIGH SCHOOL, HENLEY-IN-ARDEN

in association with: G. R. Barnsley, County Architect

associate architect: J. B. Forrest

3, the two and three storey teaching blocks overlooking the playing fields. The roofs continue the line of the surrounding trees.

4

4, the Strand frontage, with the concrete screen wall to the first floor and recessed clerestory window above.
5, the main entrance at night: the screen wall is now dark with the clerestory window a bright strip above.
6, the front of the Royal Society of Arts behind the store is better seen than previously, as the screen wall is set farther away from the columns and provides a clean, undetailed foil.

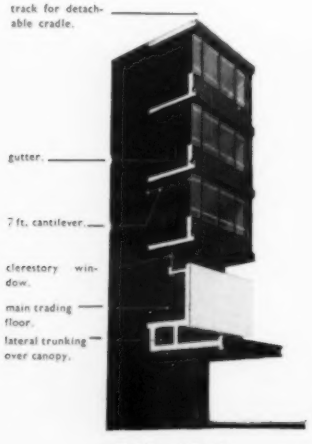
DEPARTMENT STORE, STRAND, LONDON

ARCHITECT: DENYS LASDUN, OF FRY, DREW, DRAKE AND LASDUN

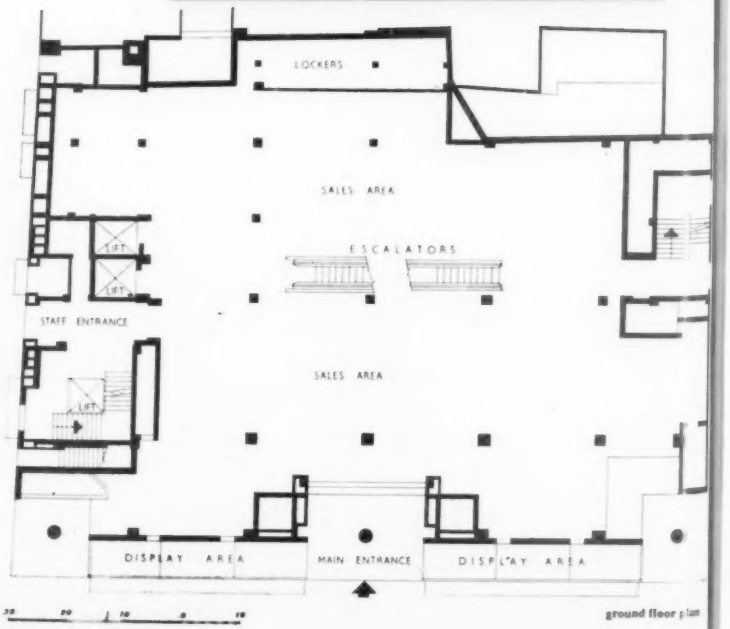
This is the first post-war building in England to make large-scale use of bronze cladding. The upper three floors of the main façade are entirely clad in pressed bronze sections and a bronze clad gutter is integrated with the cladding on each floor to minimize accumulation of dirt and bad weathering. The windows in the upper three floors have gold cellulosed frames. The main external feature is the first floor showroom, which has a reinforced concrete screen wall on three sides of the building, clad externally in reconstructed Portland stone. It incorporates a continuous clerestory window which is gear controlled and can be opened in lengths of 60 ft. in one operation, allowing the maximum flexibility internally for display purposes. An illuminated cantilevered canopy extends the whole length of the main frontage. Air doors are installed in the main entrance and circulation between trading floors is by means of escalators. The architects for the interior of the store are Design Research Unit.

5

6



section through facade



ground floor plan

7

HOUSE AT MEDMENHAM, BUCKINGHAMSHIRE

ARCHITECT: JOHN FRYMAN

The site, near Marlow, has an open view to the east, with woodland to the west. The area is liable to be flooded and the main rooms have therefore been planned at first floor level. The whole house stands on four welded portal frames with eight welded box columns and perimeter steel beams. The foundations are of reinforced concrete, and apart from steel beams over the major window openings the framing terminates at first floor level. The walls are of 6 in. blocks and insulating plaster faced externally with Western Red cedar; the floors are softwood joists, with asbestos cement soffits, 4 in. of mineral wool and hardwood boarding. The roof is of compressed straw, three layer felt and chippings with hardboard or plaster linings. The bathroom is centrally placed to eliminate condensation, and all the plumbing is stacked in the centre of the house. The windows are purpose made with wood frames and metal inserts.

7, the west front, with the long windows to the bedrooms, study and living room.
8, looking under the house to the garage and entrance hall. Windows on this side are small and at high level.
9, the entrance hall with the overhanging living room beyond.

8

9

EXHIBITIONS

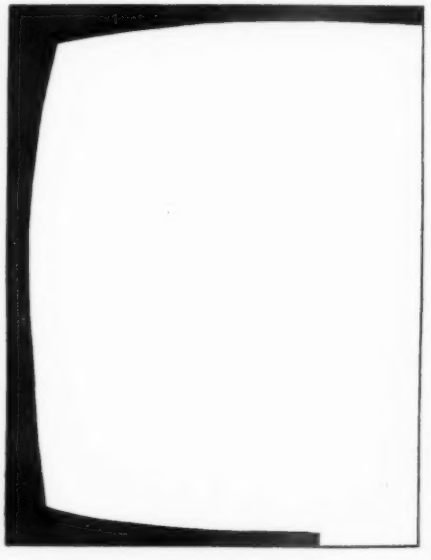
PAINTING AND SCULPTURE

The exhibition of paintings called 'Place,' held at the ICA and organized by Roger Coleman with the collaboration of three young English action painters, was an experiment in the mechanics of audience participation. It was all done with screens, and might have worked if the spectator had been given something interesting to look at while he was 'participating.' Coleman devised a neat ground plan for the screens, and short of using one of the pictures as a 'welcome' mat couldn't have done more to bring pictures and people together. The panels on which the pictures were painted were all 7 ft. high and came in two widths, 6 ft. and 4 ft. These panels were, with one exception, joined together to make two-, three- and four-fold screens, and, apart from those that zig-zagged out from the end walls, were painted on both sides. The screens were disposed diagonally across the gallery to form narrow alleys and small 'precincts,' and since the paintings started at the spectator's feet and rose well above his head he was hemmed-in by painted surfaces at almost every step on the walk. (The walls of the gallery were bare, and the bits that could be seen were painted black, as if in mock mourning for the passing of the old order.)

In the space at his disposal, the spectator remained too close to the panels to obtain an undistorted view of any work in its entirety, and it seems to have been taken for granted that this would automatically give him the sensation of being enveloped or invaded by the paintings. In practice, no such thing happened, and Coleman either left something out of his calculations or was let down by his collaborators. What was needed from the painters to make the scheme work was an expanding space job of the kind 'majestically demonstrated in Pollock's *Blue Poles*,' to quote from Coleman's guide to the exhibition; but it was quite evident that they thought Coleman's scheme would do the job for them, and that they expected their work to be given the same enveloping power as Pollock's as soon as it was stood against our faces.

If Coleman had had several hundred square feet of Pollock's drip painting to put on his screens the effect would probably have been unforgettable, but it would have been due almost entirely to the special nature of Pollock's work. It isn't merely the big canvas and the flat space concept, but the teeming repetitiveness, the long, flowing overlapping skeins of multi-coloured line that makes his drip paintings seem to surge through one when one goes close to them.

The large, flattish areas of colour in the panels provided by Coleman's three collaborators were too uneventful, and too uninteresting as texture, to serve his purpose. These young men—Robyn Denny, Ralph Rumney and Richard Smith—have already gained some reputation in *avant garde* circles. At present they seem to be intent on producing something analogous to the kind of music-making that's called 'minority pop'; I have the impression that in an arrogant sort of way they are deliberately spending their talent on something humbler than fine art! Coleman says that they have arrived at 'the significant aesthetic decision' to accept mass media 'as a legitimate body of reference,' and adds 'note Rumney's CinemaScope heads,' 1. These 'heads' are large, flat, two-colour



1

abstracts and are nice examples of what I mean by 'minority pop' painting. They are somewhere between 'fine art' and commercial entertainment, and are neither fine nor entertaining.

A number of Gwyther Irwin's extensive *collage* surfaces—shown recently at Gimpel Fils—possess qualities that would have lent success to Coleman's exercise in exhibition design. They have subtleties of tone and an all-over flicker and ripple of abstract minutiae that repays close examination.

Irwin makes his pictures out of posters that have been stripped off hoardings, and great soggy masses of this raw material are delivered to his studio a lorry load at a time. The backs of used posters serve his low-keyed, monochromatic sense of colour extremely well, and he only takes snippets from the printed side on the rare occasions when he feels the need to disturb his muted surfaces with a few bright accents. Whenever he fastens a single, perforated, broken-edged sheet of paper to a black background the effect puts one in mind of an ancient parchment with the inscriptions gone, and it looks too much like a boring museum item, but when he covers a support from edge to edge with small,

2

hand-torn pieces of paper closely related to one another in shape and tone his work acquires a hushed, meditative, faintly melancholy charm, and in such works as 'Lazy Man's Land,' 2, the sense of light and purity conveyed by his assemblages of greyish paper scarred and soiled by soot lines and stained by stale paste is a remarkable accomplishment.

Leon Kossoff, who has been exhibiting at the Beaux Arts, has almost the exactly opposite intention to Irwin. He turns paint into an unspeakably gross substance for the expression of a vision of mankind benighted by age, illness and sorrow, and dragging out his existence in cities irremediably soiled and hideous. I can't take it, but I'm prepared to believe that its desperate turgidity is a horrible form of

3

eloquence. His 'Building Site with St. Paul's,' 3, perhaps the most readable of his paintings, is one of two works which have been acquired by the Chrysler Museum.

The art of Bosch gave rise in the sixteenth century to a very flourishing school of imitators. They treated the naked human figure as an emblem of the degradation of physical life and were usually horribly complacent about it. Their pictures swarmed with sadistic, pornographic and scatological details which only got by because they were supposed to be listing the temptations of St. Anthony or the punishments which awaited sinners in hell. One of these pictures, an 'Inferno,' 4, attributed to Jan Mandyn, has found its way to the Arcade Gallery. There is a good deal of brutally comic grotesquerie to be discovered in the treatment being meted out to the tiny heaps of naked figures, but the painter is not particularly interested in devising new horrors and is rather unusually concerned with the plausible organization of his strip-like planes. The fantastic architecture of beer jugs and torture machines and the large raised platform on which one figure is being very slowly roasted catch the light from unseen fires and are coloured a delicious pink—though it occurs to me that the painter was probably trying to catch the colour of flayed human flesh.

5

The Spanish painter Antonio Lago, whose work was shown for the first time in London in a recent mixed exhibition at Arthur Tooth & Sons, has, like Irwin, the impulse to convert his sense impressions into a luminous spaciousness. His abstracts are looser than Irwin's and the activity in them is a kind of fading and dissolving, 5. They have a cool sweetness which, due perhaps to the widespread influence of Sam Francis, is less rare in paintings of the abstract impressionist variety than in other contemporary work.

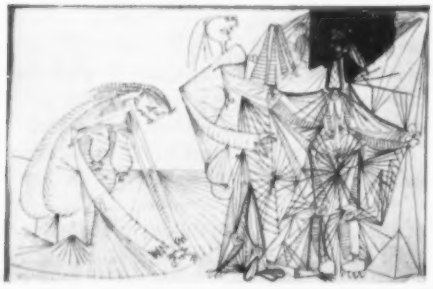
Sweetness is a quality rare enough in good contemporary sculpture, and for that matter has not often been considered a necessary virtue even in those periods when the gracefulness of the human figure was thought to be a not unworthy subject for the sculptor. The only distinguished figurative style that I can think of at the moment in which sweetness was persistently sought and captured was that evolved by the sculptors of the polychrome saints in Bavarian Rococo churches, and although these smiling, light-stepping, elegant figures are emblems of a belief in the resurrection of the body that we have had reluctantly to forsake, they are also potent images of the spirit reconciled with the flesh, the hope of which is still part of our make-up. Without aiming so high, and taking care to provide himself with an alibi which might pass as irony, Emilio Greco edges towards sweetness in his bronzes at Roland Browse and Delbanco. They are mostly of girls in bikinis, and it is a pleasant change from the nudges and winks of the organic abstraction to contemplate sculpture which at first sight appears to arise from a boldly

4

6

romantic response to the human body. But Greco's work is not quite the bold response that it seems to be. It is clear that he admires Modigliani, and has something of his spirit: like him, he is an eclectic, and his work contains brilliantly effective echoes of many sculptural styles, but by

comparison with Modigliani's paintings of the reclining nude, his figures are lacking in frankness and an inner core of conviction. Some aspects of his treatment seem to me to be an admission that the attributes of his model are clichés. He has bound her breasts out of existence, 6, as if in negative response to Hollywood and the brassiere trade and although he treats stomach and buttocks as compensatory felicities he uses tricks of posture that remind one of the fashion model. The skilfulness speaks for itself and the charm is inescapable, but true sweetness cannot survive the nervy game of blowing hot and cold.



7

Greco also showed a group of drawings in hatched line which were clever but empty and I find it rather surprising that a sculptor whose figures recall Italian coastal resorts has not contributed in his drawings to the classic modern theme of figures on the beach. A splendid example by Picasso, 7, one of the great masters of the theme, has been on view at the Hanover Gallery. It belongs to a series of large pen drawings made in 1938. The crouching figure on the left is looking at a crab, and she looks with almost everything she's got. The inventiveness, based on intense observations, with which Picasso conveys her total absorption is both comic and profoundly touching. **Robert Melville**

HISTORY

CHARLES CLERICI: CRAFTSMAN IN SCAGLIOLA

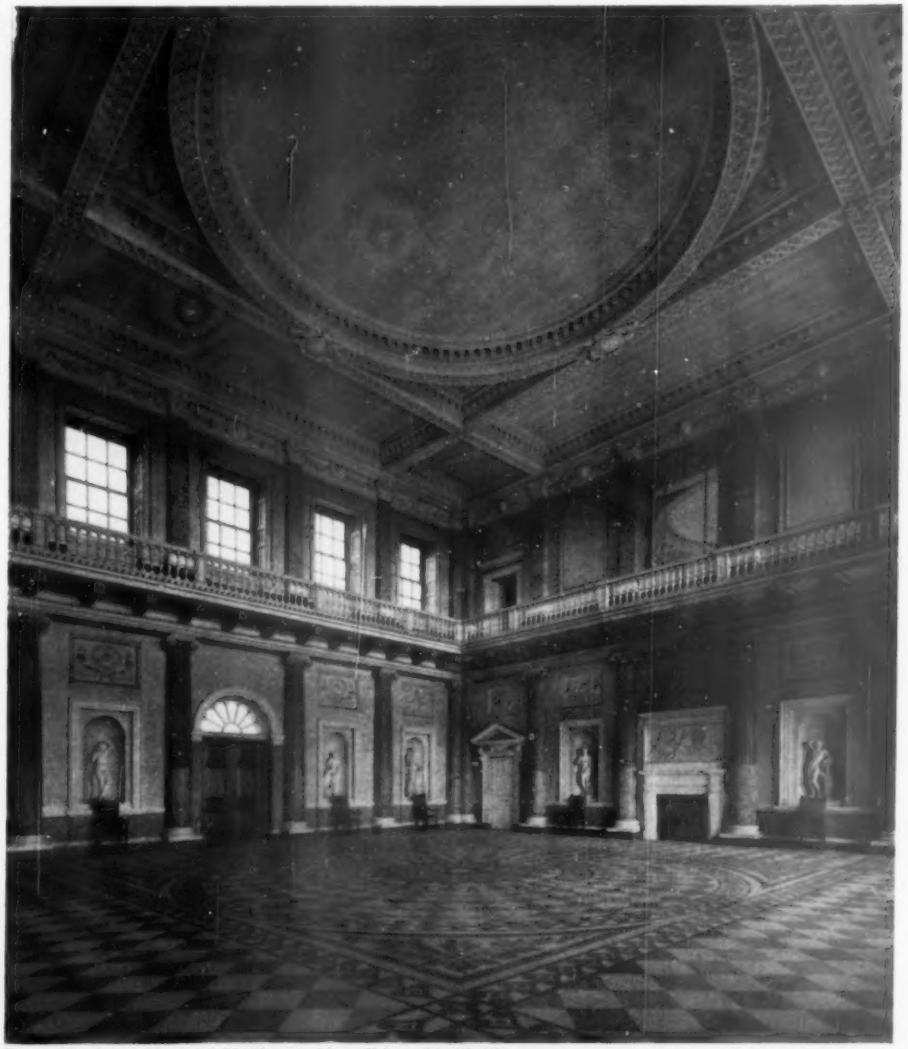
Palladianism, under the aegis of Lord Burlington, flourished in the first half of the eighteenth century. The desire for things Italian, which included stucco and plaster work, resulted in an influx of Italian workers into England. The plasterers are sometimes remembered by name—Altari, Bagutti, Varssali, Cortese . . . but the details of their lives are forgotten; the majority remain anonymous. They were not all mere stuccoists: some specialized in scagliola.

At one time a jealously guarded secret, scagliola is basically a fine plaster with additives—sometimes glue, albumen, even curdled milk, according to the particular theories of the craftsman, and, of course, colouring matter—which is planed and highly polished so that it looks like and is often indistinguishable from real marble.

Scagliola was introduced into this country—so it is said—by the architect James Wyatt, at the Pantheon, Oxford Street, in 1772. In fact, it was used by other architects before that date: just one illustration is Thoresby Park, in Nottinghamshire. The mansion, a seat of the Duke of Kingston, was designed by John Carr, of York, and finished in 1768. The Reverend William Bray, itinerant writer of 'A Tour into Derbyshire and Yorkshire,' was sufficiently impressed by the house to give a description in which he mentioned the scagliola. Of the central circular hall, he said 'The sides of this room are of the same composition as is used in the hall in Lord Rockingham's, resembling a yellow marble; on the sides are pillars and pilasters, mostly white but some resembling verd antique. The floor is of the same composition.' Alas, the mansion and building records have long since gone.

Fortunately, the muniments of Wentworth Woodhouse, former home of the Marquis of Rockingham, remain, and there, among the vast accumulation of documents, is a letter from John Carr, the architect, in which he mentions that the scagliola work at Thoresby Park was done by a Charles Clerici, assisted by Ely Crabtree, who later set up as a plasterer in Lendal, York. From the same muniments it has been possible to enlarge a little on the life of this hitherto unknown craftsman.

The year after the completion of Thoresby Park, Clerici appeared at the town house of the Marquis of Rockingham, in Grosvenor Square, where for a while he worked—and lived, since his bills for washing, liquor, the shoemaker and tailor



The Grand Saloon at Wentworth Woodhouse, with scagliola work by Clerici.

were all paid by the steward. In 1774, he again transferred to the Marquis's country seat at Wentworth Woodhouse, Yorkshire, where he had been in the 1760s, and there remained for many years, still working under Carr's direction.

His pay was a guinea a week in addition to his board and lodging—not bad remuneration when one considers that the steward, a man of considerable responsibility, received only £50 a year.

Arthur Young, the agriculturalist, visiting Wentworth Woodhouse, remarked that 'the most skilful hands from Italy are kept constantly employed in finishing this noble design.' He exaggerated, unless he referred only to Clerici's two hands, for no other Italians figure in any of the accounts.

Clerici did a variety of jobs: he made casts, pedestals, scagliola tables and put vine leaf insets in marble chimney pieces, but his principal work was in the Grand Saloon, illustrated on page 356. The niches, the eighteen fluted Ionic columns beneath the gallery, the eighteen Corinthian pilasters to the gallery, and the fine 'marble' floor, designed by Carr, are his epitaph: they are superb.

Clerici must often have wondered whether his time had been well spent whilst working in the great shell of a country house for the pleasure of one nobleman. But in 1789, seven years after he had left, the Saloon was really used in the manner which its scale justified. The occasion was the visit of the Prince of Wales. The park was crowded with 20,000 rejoicing subjects. Inside, a brilliant assembly thronged the Saloon and, lit by a vast chandelier of 200 tapers and festoons of 8,250 lamps, the work of Charles Clerici was there for all to admire.

Clerici's stay at Wentworth Woodhouse was fairly uneventful, except for the time when he put a maidservant in the family way. A curious situation then developed. Clerici, apparently, retired into the background and left the senior members of the household to worry—not over the girl's plight—but over what was to become of the yet unborn child: an infant at Wentworth Woodhouse would be highly inconvenient. They need not have concerned themselves: the young woman died—to their obvious relief.

For the rest, Clerici lived quietly: he was treated with respect and addressed as 'Mr.'; when he was sick, a woman was engaged at 6d. a day, to look after him and, very occasionally, small payments were made to him by the steward . . . for tea and sugar. Then, in August, 1782, his work finished, Clerici drew the whole of his salary for eight years 259 days—£475 10s. 10d.—and disappeared again into oblivion.

Robert Brian Wragg

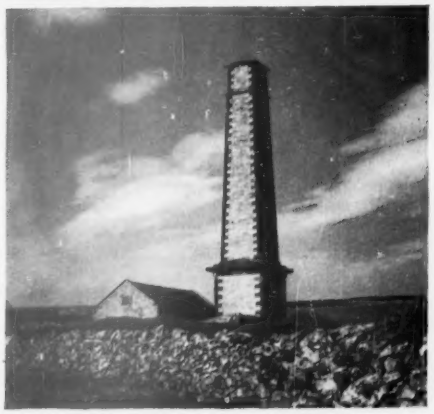
FUNCTIONAL TRADITION

THE FUNCTIONAL FOLLY

The Concise Oxford Dictionary *defines a folly as 'a costly structure (considered) useless.'* The definition has the advantage of conciseness, no doubt; but what led to the erection of nine out of ten of the buildings that are normally known as follies? Nothing else, surely, but the need to supply the landscape with a vertical feature in a particular spot.

Accept this definition—which isn't really affected by the fact that many follies were designed to have romantic overtones as well—and you arrive at the conclusion that the 'uselessness' of follies for 'practical purposes' is beside the point; and indeed most eighteenth-century follies did serve some practical purpose, though that was of less importance than the aesthetic one. Buildings put up for utilitarian reasons may in terms of landscape be follies—in short, thus there are such things as functional follies. This is a truth of great pregnancy for us today; but before we turn to that let us examine a small collection of follies, functional and otherwise.

1 is at Wroxton, Oxfordshire, and dates from the middle of the eighteenth century; 2 stands on the edge of the Cotswolds, overlooking Broadway and the Vale of Evesham, and was built some fifty years later. No one, presumably, would deny the term 'folly' to either of these. With 4 we have our first functional folly, the chimney of a Derby-



1 | 2
3 | 4
5

1, *Wroxton, Oxfordshire.*
2, *Broadway.*
3, *Bridgwater, Somerset.*
4, *near Ashbourne, Derbyshire.*
5, *Stoke-on-Trent.*

6

7

8

9

6, *Alton, Derbyshire.* 7, *Dovercourt, near Harwich.*
8, *Portreath.* 9, *Burnham.*

shire mine. To make the strongest possible impact upon the eye a folly should have a certain strangeness of form, and this is what puts the kilns of the Potteries, three different varieties of which are seen (at Stoke-on-Trent) in 5, high up in the ranks of follydom; 3 shows a kiln folly of yet another shape, at Bridgwater in Somerset. Here it should be remarked that although the folly has been referred to as a landscape feature it is one of the many landscape features which have their place in townscape too; the lock-up at Alton, Derbyshire, 6, is an eighteenth-century functional folly in a village setting, and the tower at Harwich is a nineteenth-century one in a town. The last mentioned might also be counted among the functional follies of the coast, a large class whose practical function comes very close to their visual function as follies, it being their business to be seen or to provide elevated places for seeing from—or more often both at once. 8, from Portreath, shows a charming early example of this class, 9 and 7 later ones at Burnham and Dovercourt (near Harwich) respectively.

10, *Harwich.*

The importance of our discovery of the functional folly should by now be obvious; it is simply this, that in times when the means of erecting follies in the old sense are lacking we really have no need to do so: there are scores of utilitarian structures which can do everything the non-functional folly of the eighteenth century did. Only of course they must be properly sited; and so we come back once more to the necessity of establishing the same kind of visual control over our *whole* surroundings as the Georgian landowner had over his relatively narrow acres.

Marcus Whiffen

COUNTER-ATTACK

GRIMSBY, LINCS.

There used to be a small open space immediately west of the centre of Grimsby called the Bull Ring. For some time it was used as a car park and at least saved a few cars from adding to the congestion. Or it might have made a pleasant little space for pausing in shopping. However, when the public lavatories in the Old Market Place were pulled down, the Borough Council decided that they would find a good new home in the Bull Ring. The only question was: should they be built above ground and so save money or underground and so save space? After much debate, the space-saving plan was adopted, and digging began. Things didn't quite run smoothly, but eventually the work was completed: only, somehow they weren't quite as underground as expected; and with all the money spent on expensive excavation, they stick up about three feet

1

2

above the pavement level. 1. The space is destroyed as effectively as if they had been built to full height. Presumably as a bit of face-saving, the builders or the Council have given the top a bit of fancy stone-work, and even planted shrubs. 2. The whole little square has been sent packing.

THE RIVER ROE, CO. DERRY, N. IRELAND

Between Dungiven and Limavady there used to be a most beautiful stretch of the River Roe. Its banks were covered with fine trees. Now the trees are down, after some smart eyewash out of Belfast had bullied the local farmers into saying yes. The ostensible reason was that new floodbanks should be built; the real one perhaps to find some new way of coping with a bit of the unemployment problem. Unfortunately the Belfast people don't seem to have realized that the trees were there for a reason. Three main results can be expected from this little bit of ignorant interference. Firstly (in time), a beautiful stretch of the river has been made commonplace. Secondly, in a few years time the river, which was rich in salmon, will be more or less empty: the river will be overfished (as the fish will be easy to catch), and there are now no shady places which the salmon need for spawning. Thirdly, not very long hence the new floodbanks will have to be replaced, because there are now no longer any big roots to hold them in place. All this: and yet all that was needed was the repair of the old banks.

Andor Gomme

SKILL

POLYESTER FIBREGLASS *by*

Michael Brawne

1, *two structural principles and two techniques are at once contrasted in this Parisian rooftop view—the flowing shell structure of the model of a mobile hotel unit, seen also in* 10, *with the graduated build-up of linear struts in the Eiffel Tower and the predetermined, factory produced connections of the plastic mouldings with the butchered, site fitted, flashings of the Mansard roof. Both aspects need to be considered when designing with polyester fibreglass.*

It is as a corrugated rooflight that polyester fibreglass has so far made its greatest impact in building. This, however, hardly begins to explore the architectural possibilities inherent in this plastic which, like reinforced concrete, is the combination of two complementary materials: polyester resin and glass fibre reinforcement. Its great potential may in fact lie in its ability to be formed into complex, three-dimensional structures. This article therefore emphasizes the method of manufacture and the characteristics of the material and does not attempt to provide an exhaustive listing of current uses.

Polyester fibreglass has, more than any other plastic, caught the architectural imagination. It has done so presumably since it alone amongst the plastics can at present produce a structural and space enclosing element. The small-scale uses of polyester fibreglass are far from insignificant, yet it is its specific ability to produce a moulded three-dimensional enclosure which is of special interest and which may in fact be indicative of both a new technology and a new aesthetic.

Polyester resin is chemically a co-polymer of the esters. These are produced by the reaction of organic acids and alcohol and are very similar to the alkyds used in paint. Polymerization involves the arrangement of the molecular structure of a material so that it will acquire certain known and previously determined properties. It is this 'manhandling' of the chemistry which is perhaps the most important technological innovation of the post-war years and which is in the very near future likely to produce a whole series of new materials. The polyesters belong to the thermosetting group of plastics; they do not, that is to say, return to their original state when heated. They 'set,' become rigid, on being mixed with a catalyst, normally a peroxide, and an accelerator. These start a chemical reaction in which heat is given off.

In order that this resinous material may be reinforced, in particular for it to acquire tensile strength, glass fibre is added while the resin is still liquid. The glass fibre may take a number of forms:

(*a*) it may be a loose mass of chopped strands which, as the fibres are short and in random directions, has relatively low tensile strength but equal strength in all directions;

(*b*) it may be a loosely combined mat of fibres in which the fibres lie in random directions and which has tensile strength greater than that of chopped strands, or

(*c*) it may be fabric—cloth woven in a number of weaves—where the threads are spun glass fibre; this has the greatest tensile strength due to the known orderly and continuous arrangement of the reinforcing material but is also its most expensive form.

The characteristics of the material which have furthered its use in building are its ability to be made into a weather-resistant structural element of varying degrees of opaqueness and variety of colour. Its considerable strength, equal or greater than that of aluminium, is almost entirely due to the glass reinforcement. Other materials can of course be used to give strength—cotton fabric, asbestos, expanded metal—but few seem to be as useful as the various forms of glass fibre. It is also of course only with glass reinforcing that highly translucent products can be made; light transmission can be as great as 85 per cent. The selection of the appropriate type

2, *a glass fibre mat which will form part of a car body is being impregnated with resin.*

of glass fibre is therefore particularly important. Its influence on the characteristics of the material is summarized in Table 1.

Whichever type is selected, it must, if it is to be used out-of-doors or in hot humid conditions, be made of alkali-free filament. This is the more expensive version and specifications of fibreglass products should make it clear which kind is being used. In addition to this the filaments ought to be treated with a silane emulsion so that the glass fibres bond with the polyester resin. Weathering depends on this key.

The weathering is also dependent on a definite thickness of resin lying on the finished surface of the product. Very thin mats of fibreglass are produced which are used as a kind of finishing coat and which absorb and hold the resin. These should certainly be specified in any component used

3, *the same process as in* 2 *but mechanized; compressed air sprays the resin on to the glass cloth reinforcing.*

externally. In extremely sulphurous atmospheres there may still be a leaching out of the resin and the suggestion has been made that for such situations polyester fibreglass could be coated with a layer of p.v.c. or acrylic.

The greatest drawbacks to the use of fibreglass reinforced plastic are its price and fire resistance. Both resin and glass fibre are products needing considerable manufacturing resources. There are three producers of glass fibre in this country, two of whom are in fact only nominally in the field, and there are about five chemical firms marketing polyester resins. Their prices are to quite a large extent dependent on their capacity and the likely demand. Labour costs on the finished component are also often high since few building elements, with the possible exception of corrugated roofing sheets, have yet been produced under a fully mechanized system. The price may, however, be lowered with greater demand; in the USA, for example, where there is a larger market and rather greater competition between the producers of the raw materials, fibreglass articles are often considerably cheaper than in this country.

Fire resistance is perhaps the more serious problem. It is possible to add chemicals to the resin which will make the laminate self-extinguishing; it will only burn while in contact with a flame. It is interesting that despite this relatively poor fire resistance, a glass fibre reinforced plastic was used for the casing of some capsules shot into outer space and recovered after re-entry. It would seem that what in fact happened was that during the short intense exposure, the surface carbonized and this new layer provided

table 1: strength of polyester fibreglass and aluminium

	rod with uni-directional rovings	plain weave cloth laminate	chopped strand moulding	aluminium
tensile strength 1,000 p.s.i.	120	38	26	10-35
compressive strength 1,000 p.s.i.	70	30	25	10-15
flexural strength 1,000 p.s.i.	150	48	32	10-25
impact strength (edge unnotched) ft-lb/in.	70	22	20	20

a kind of protective coating. It was able to do so because of the very low thermal conductivity of the material, about one seven hundredth that of aluminium. Some recent tests on corrugated roof lights have apparently shown very similar results.

The important weakness of the self-extinguishing additive is, however, that it may considerably lower weather resistance and be responsible for discoloration. There is also, in any case, appreciable loss of the self-extinguishing effect after prolonged exposure and the LCC, for example, makes no distinction between the two grades. It would seem that, at present at any rate, the self-extinguishing form should only be used internally, away from ultra-violet radiation, in places where it is likely to come into contact with cigarettes, an electrical short circuit or similar hazard.

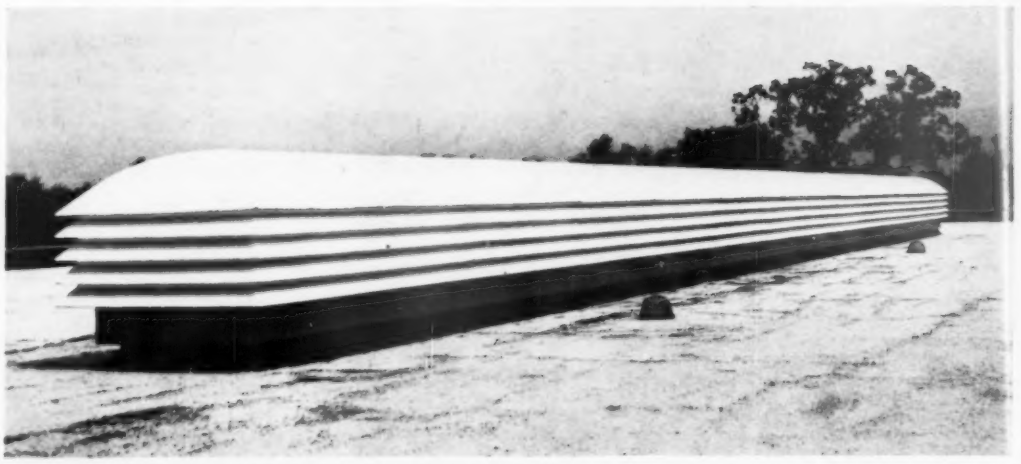
Until very recently polyester fibreglass products were made more often by amateur and professional enthusiasts in disused garages than as part of a co-ordinated industrial process. This was due to the fact

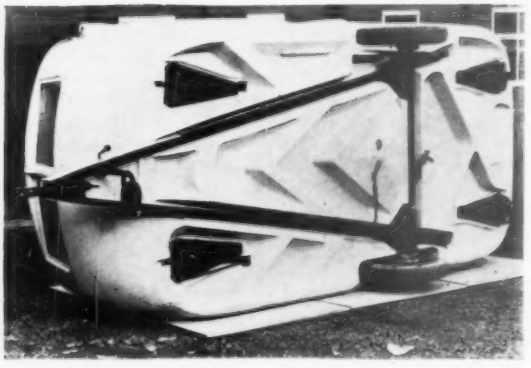
4, these bus components are economical in polyester fibreglass since the number required is relatively small and the shapes complex.

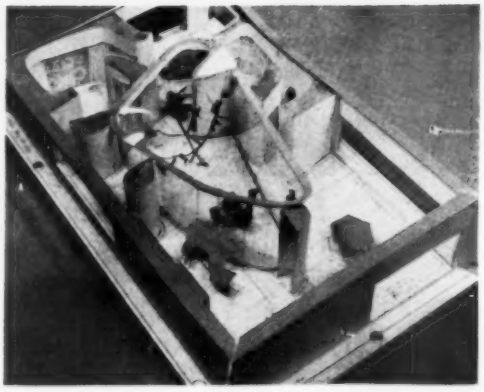
that the simplest method of manufacture, the hand lay-up process, requires little capital and hardly any equipment since no pressure is needed to produce a moulding. This basic process consists of a few simple stages: a form of plaster or wood is coated with a parting compound (in the same way that shuttering is oiled), the resin is mixed with the accelerator to start the chemical reaction going, pigment and filler may also be added at this stage, some of this glutinous mass is then spread over the mould and the reinforcing material added. Further layers of reinforcing and resin are built up until the right thickness is achieved. The material then cures at room temperature. The resultant product is a hard tough shell, smooth on the mould side, rough on the other.

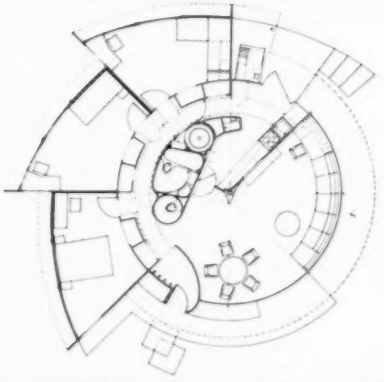
Various attempts have been made to mechanize this particular process. Instead of placing the resin by hand it can be sprayed on and equipment has been used in which polyester is sprayed from one nozzle, the accelerator from another and they combine to react chemically on the reinforcing. In addition to this, chopped-up strands of glass fibre may be blown on by a third nozzle so that the three components of the

[continued on page 361









5

6 7

8 9

10

5, a moulded roof top monitor at the Monsanto laboratories in St. Louis which is not attacked by corrosive chemical fumes.

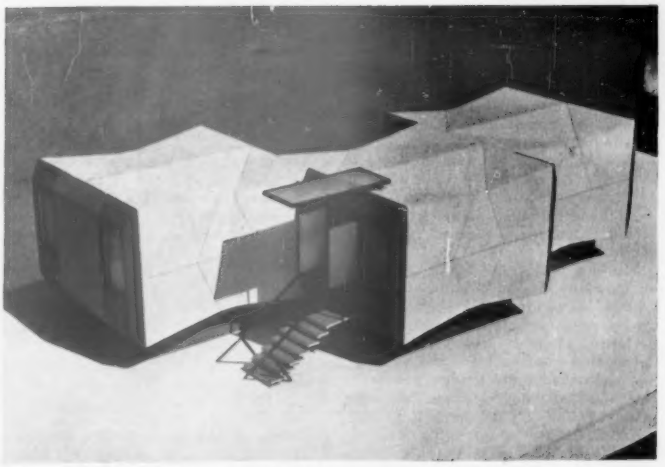
6, surface continuity and smooth flow can be achieved in quite intricate forms such as this ducting of the Viscount 800.

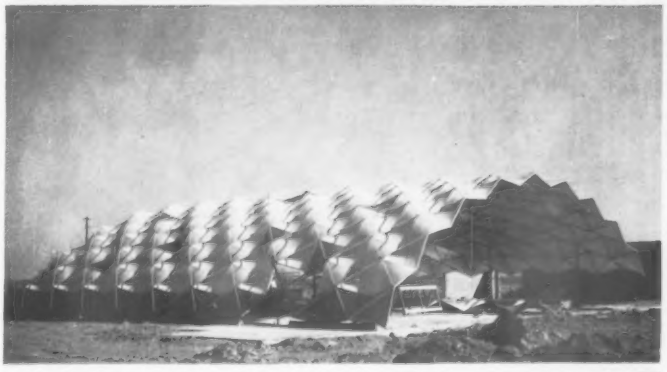
7, the underside of a caravan chassis designed to contain the wheels and metal legs and which achieves rigidity through the depth necessary to house these parts.

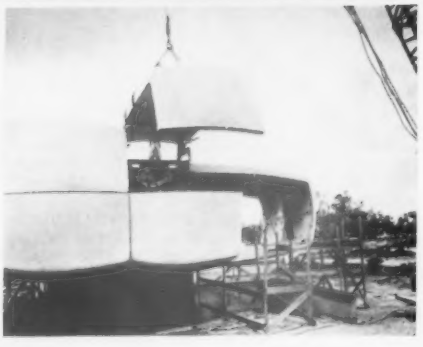
8, House '1980' at the 1956 Ideal Home Exhibition by Alison and Peter Smithson was made of fibrous plaster but clearly illustrates the aesthetic of reinforced plastics.

9, a spiral house designed by Coulon, Magnant and Schein for the French magazine 'Elle' in 1956. It exhibits, particularly in the bathroom area, many of the forms also found in the Smithsons' house of the same year. These shapes are made possible by the simplicity of the hand lay-up process.

10, a prototype hotel cabin also by Coulon, Magnant and Schein which was part of a study sponsored by the French Hotel Federation. The cabin consists of two upper and two lower moulds and includes a bathroom in the bulge to the right of the door. Four cabins can be loaded on to an articulated trailer.







11, *three joined shells at the 1957 Triennale by Robert Menghi built up from polyester fibreglass skins on a honeycomb core.*
12, *prefabricated fibreglass house units designed by Cesare Pea. The faceted wall units which include heating elements are also intended as cladding for multi-storey buildings. These units have something of the character of Howell and Killick's project for Churchill College.*
13, *diamond shaped polyester fibreglass hyperbolic paraboloids used with a tubular frame for a factory in Texas.*
14, *a complete bathroom unit of polyester fibreglass mouldings with plumbing connections installed in the factory. It was designed by Alberto Roselli and is a development (in metal) of the ideas of Buckminster Fuller.*

11 | 12
13 | 14
15 | 16
17

15, *the Monsanto 'House of the Future' is, despite its Disneyland setting, a serious study in the large scale use of plastics. It was developed by Marvin Goody and Richard Hamilton with H. P. Whittier, of Monsanto, as part of a project at M.I.T.*
16, *the structure of the Monsanto House consists of eight shells cantilevered from a central square core of four columns tied at top and bottom. Each L-shaped form is built up from two separate sandwich-construction shells; both have two skins of polyester fibreglass, the outer with an isocyanate foam core, the inner with a 3-inch-deep honeycomb core for the ceiling and a 4-inch-deep honeycomb core for the floor. The shells were made by the hand lay-up method and formed with a vacuum bag.*
17, *the bathrooms of the Monsanto House were designed by Henry Dreyfuss. Except for the w.c. pan the entire bathroom consists of two polyester fibreglass moulds which join about shoulder height. Radiant heating panels are attached to the back surface of some of the walls.*

continued from page 360]

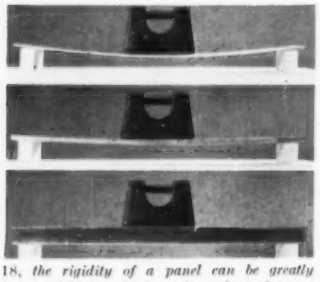
material arrive simultaneously on the prepared mould. While this is an obviously rational method it has not as yet produced wholly satisfactory results in practice. It is very dependent on the skill of the operator and the smooth functioning of the equipment. Unfortunately a good deal of equipment has been modified for use with polyester fibreglass rather than designed with this specific problem in mind and it is probably not until new machinery comes on the market that this particular method will prove successful.

If two smooth surfaces are needed in the finished product, the polyester fibreglass has to be placed between two matched moulds and these brought together under pressure. As it is uneconomic for these moulds to remain idle while the resin cures, heat is also added during this stage so that the material will harden in a matter of seconds rather than hours. A typical process might consist of the manufacture of miners' helmets in which chopped strand is sucked on to a mould by a vacuum process in an enclosed booth, the shaped reinforcing is placed between the matched moulds, a mixture of resin

and accelerator is forced into the space between them and the two moulds brought together under heat and pressure. This method is a repetitive mechanized operation which needs a long run of production—perhaps a thousand parts—to pay for the heavy mould costs and capital outlay in equipment. Given such a long run, however, the cost of each item is significantly lower than if it were made by hand. Charles Eames's famous moulded chairs are, for example, produced by this method.

Simpler, less mechanized variations on this are the bag moulding techniques in which a flexible sheet is forced over a mould by suction or pressure. There is also a continuous lamination process where the material is shaped between rollers and it is this method which is used in any fully mechanized production of corrugated sheets.

Polyester fibreglass has also been extruded using roving (a bundle of



18, *the rigidity of a panel can be greatly increased by introducing a foamed core between two skins of polyester fibreglass. Each of the three panels has the same self-weight and the same superimposed load.*

continuous glass strands) which has very great strength—in tension twice that of structural steel—due to the one directional orientation of the filaments. At the moment, however, it is only possible to extrude very small sections up to a diameter of $\frac{5}{8}$ in. which are used mostly for fishing rods and aerial supports. The suggestion has been made though, that in view of its great strength it may be a suitable material for prestressed construction. When the technical problems of extruding are overcome, a whole new range of products with very great possibilities is likely to become available. This is particularly true since extrusions can be designed as very complex shapes which make possible difficult connections and which are also able to distribute the material so as to create structurally economical sections. As these extrusions are likely to be stronger than comparable sections in aluminium, they may prove yet another serious competition to the use of aluminium in building.

Flat sheets pose, of course, much less of a problem. The reinforcing can be coated by rollers and the mould costs, two flat plates, are very much lower. It is nevertheless in a curved or faceted form that polyester fibreglass finds its most logical use, both in terms of strength and economy. Whether ease of production under present techniques or versatility and economy in use will determine the trend in the manufacture of polyester fibreglass may, to a large extent, depend on the design of the right equipment at this time. The choice between these alternatives may also have some architectural repercussions.

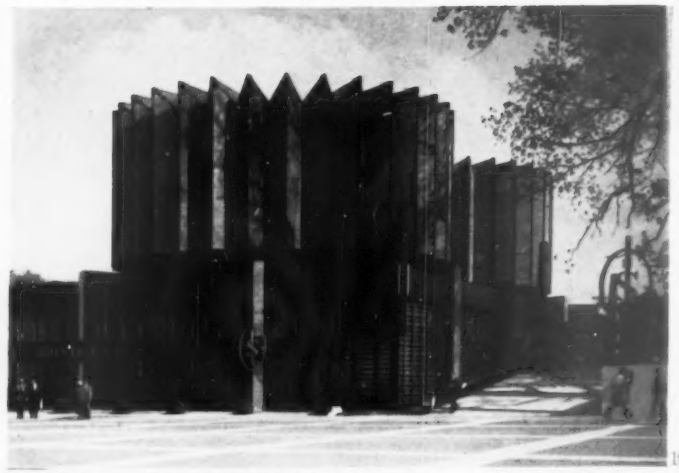
In the last three or four years there has been a noticeable trend towards the design of continuous and often curved surfaces. This is undoubtedly partly a reaction to the linear, frame and infill structures of the previous decade, but is perhaps also a forecast of the shapes likely in a building technique largely dependent on the use of plastics. The interest which is being shown in the architecture of the Aegean islands or that of the Sahara fringe is probably equally symptomatic of this trend towards a moulded building. It is in some ways obviously comparable to the fascination which Japanese architecture exercises as a prototype for modular, frame and panel design. Often these sculptural forms have had to be built out of substitute materials and they are, therefore, important as spatial prototypes rather than as technical innovations.

The Smithsons' House of the Future displayed at the Ideal Home Exhibition three years ago, 8, has all the characteristics of a polyester fibreglass structure although it was actually made of fibrous plaster. Its continuous, often doubly curved surfaces with rounded corners could easily and economically be moulded out of glass fibre reinforced polyester. Additional strength and heat insulation could be given by using this over cores of foamed plastic or bonding it to paper or aluminium honeycomb. The thickness of this core, as of the fibreglass itself, can, of course, be varied depending on the strength required. Since the abrasion resistance of polyester is not very high (making it a questionable material for kitchen sink units), it may be advisable to give the structure an outer coating of melamine resin. Recent experiments have also shown the possibility of embedding 'Mohglas,' graphite coated glass cloth, as part of the laminate to create a heating element. Sections of the house could, therefore, contain radiant surfaces as part of the structure.

There have naturally been several projects in which polyester fibreglass elements were part of the structure. In 1956 René Coulon designed a spiral exhibition house, 9, in which the entire enclosure was fabricated out of segments laid up by hand on a plaster mould. More recently two Italian designs, one for a roof structure, 11, the other for wall components, 12, have studied the use of reinforced plastics. There have also been several schemes for complete bathroom units, 14, which obviously owe a good deal to the very much earlier 'Dymaxion' designs of R. Buckminster Fuller. Such complete units seem especially suitable, at this stage at any rate, for aircraft, trains and ships.

The most ambitious and widely publicized of these projects has been the 'House of the Future' designed by Marvin Goody and Richard Hamilton as part of a programme financed by the Monsanto Chemical Company in the States, 15, 16 and 17. Despite certain disappointing aspects of the design—especially its fenestration—this is the sort of exploratory study which is all too rare and which can really only take place if sponsored by industry or government. In the Monsanto House two identical doubly curved shells—one for the roof and half the wall, the other for the floor and remainder of the wall—are cantilevered from a central structural core. Eight pairs of these shells form the cruciform enclosure of the house.

It is perhaps outside these architectural prototypes that the most interesting developments are occurring and have been able to reach the production stage. Boats 56 feet long have been built as a single continuous structure and moulded caravan bodies are now common, 7.



19

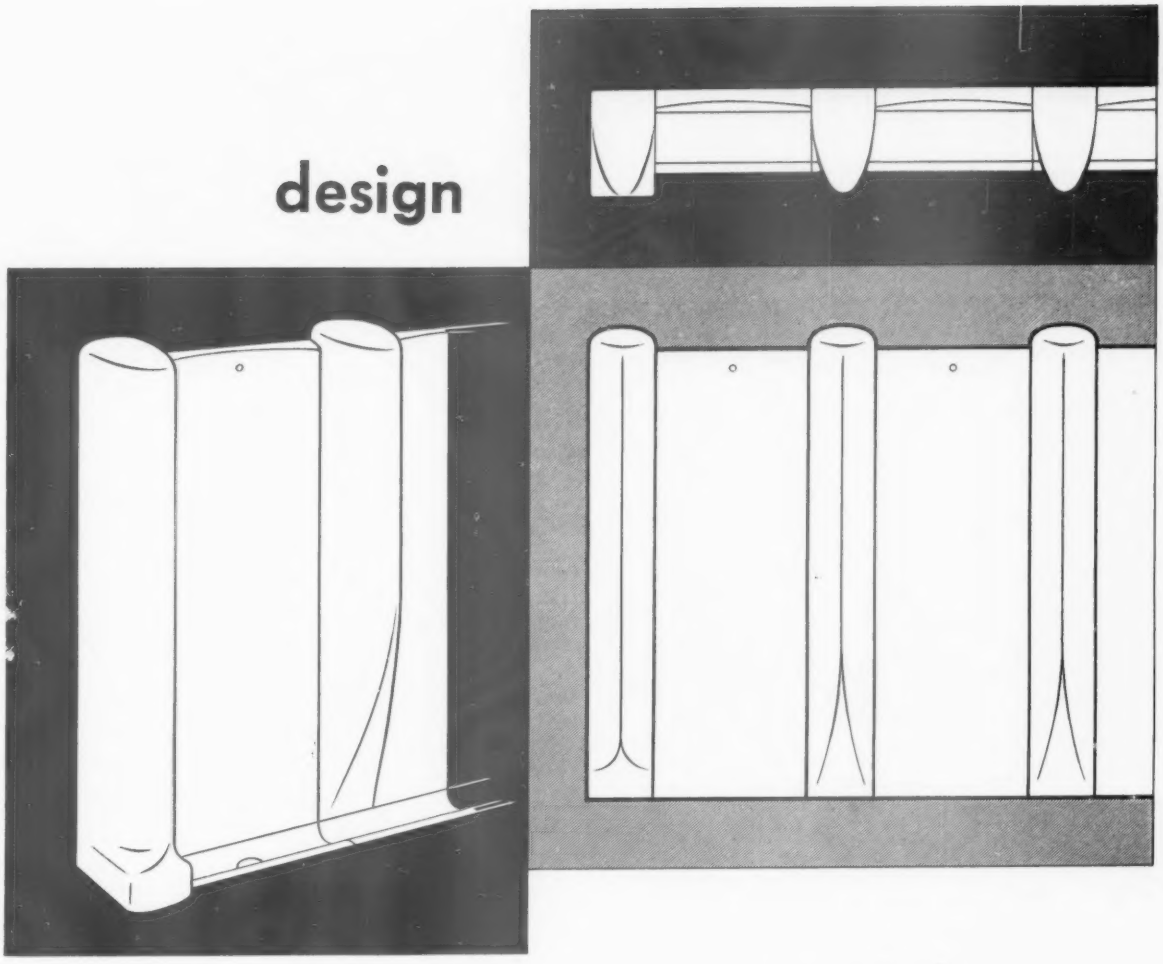
20

21

19, 20, *the two lanterns of the Solvay Company's pavilion at the* 1958 *Brussels Exposition were made of translucent and coloured polyester fibreglass panels with a honeycomb core.*
21, *translucent polyester fibreglass umbrellas designed for the American Exhibition in Moscow by George Nelson.*

The manufacture of car bodies, 2, is providing useful experience in the serial production of large components though at the moment these are more expensive than a comparable metal item mass produced. But the geodesic radar domes of the North American defence system are perhaps the most spectacular and vivid application of the material.

Whether the implications inherent in these domes or the Monsanto house will be pursued is, of course, very much open to question. It is, for example, possible that the aircraft industry which in this country is at the moment anxious to deploy its resources will turn to building. In that case its accumulated knowledge of skin structures would find a useful outlet in reinforced plastics. It is equally possible that the present use of polyester in a vast number of small articles—one catalogue lists over 90 separate categories—may prevent its quick development. It is also true that despite its great advantages—strength, colour, translucency, weather resistance, fabrication—it has some considerable weaknesses—fire resistance, abrasion, cost. The very fast rate of development in the chemical industry may, therefore, supersede polyester fibreglass by a more advantageous, a more 'universal' material before it has even been fully explored.



design

material

What architects and local authorities have been waiting for—a slab urinal made of vitreous china. The 'Standard' Vitural is non-absorbent right through, in its body material as well as its glaze. Neither will craze or deteriorate. The urinal is, therefore, always hygienic and odour-free. Clean simplicity of design and an alternative form without stall divisions are further advantages of the 'Standard' Vitural. For fine design in the right material, specify 'Standard' vitreous china.

vitreous china by **Standard**

MANUFACTURED BY IDEAL BOILERS & RADIATORS LIMITED · IDEAL WORKS · HULL

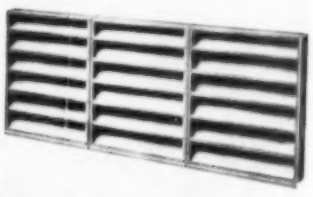
449

THE INDUSTRY

Fixed louvres

Greenwood-Airvac have put a new range of aluminium fixed louvres on to the market. The case for the aluminium as against the wood louvre is greater than it might appear, since the effective size for comparison is not the overall size of the louvre but the free area between blades and this for aluminium will be between 50 to 60 per cent of the overall size and for wood only about 33¼ per cent. The Greenwood-Airvac range is composed of standard units of widths of 15 and 18 in. and heights of 12 in., 18 in. and 24 in. These units are all 2½ in. deep and can be bolted together in any combination. When this is done, the vertical joint is closed by a pair of pvc tubes, the horizontal joint by the turn down edge at the foot of each unit. Greenwood-Airvac prefer to assemble the units in their factory. The price of the three 15 in. by 18 in. units in the photograph is £6 15s., to which must be added a charge of about 10 per cent if shop assembly is required.

Greenwood and Airvac Ventilating Company Limited, Beacon House, Kingsway, London, W.C.2.

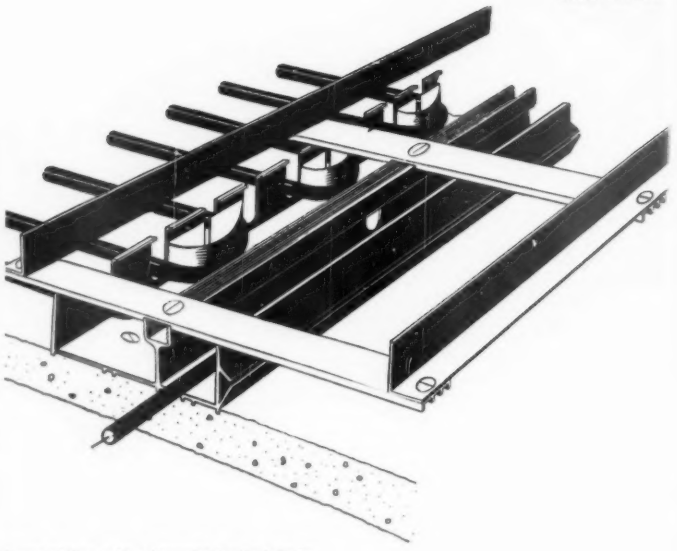


1, *the Greenwood-Airvac aluminium louvre.*

Thermodare

Embedded electric floor heating has become all the rage, before we know very much about it—as so often has happened in the history of technology. One of the unknowns is —whether or not the cables should be buried for all time or should be withdrawable in case of breakdown. Thermodare have now produced a withdrawable system of extruded aluminium trough sections which house the main distribution wires and accommodate the ends of element loops. When the troughing has been laid and elements looped into position a 'structure' of cross straps and angles is fixed to the top of the trough—the upstanding legs of the angles forming a stop to the floor screed. Into the space between these legs sits a metal frame with reinforcing bars which is filled with concrete and finally with the floor finish to form a cover—removable for inspection of the heating system. The company issues a good explanatory booklet with stage-by-stage pictures to demonstrate the installation procedure.

Thermodare (Great Britain), 94/98 Petty France, S.W.1.



2, *one of the working diagrams for the installation of Thermodare electric floor heating.*

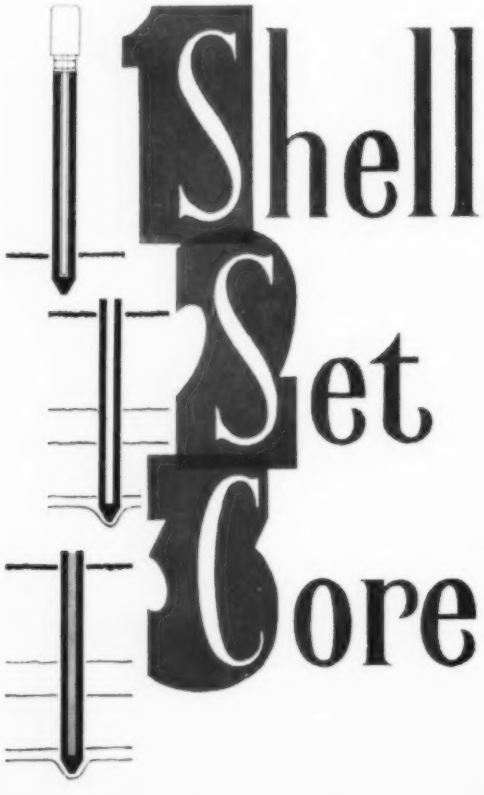
Graceline

Edge finish has always been a problem with rigid plastic coverings to worktops and draining boards. One solution was the traditional thin hardwood strip; another to cover the edge with a strip of plastic, machined off flush with the top surface. But now it is possible to have rounded edges, down to radii of 1 inch for internal or external angles.

The Formica people have developed a form of their material incorporating a plasticizer, which they claim not to affect the durability and heat-resisting qualities now familiar to us all.

A number of firms who make plastic covered equipment have seized on this—3 shows a unit made by Graceline Units Ltd. of West Drayton, which, with a stainless steel sink in size 21 in. by 63 in. costs £24 19s. 4 shows a cutaway detail of the edge. Presumably architects can have

[continued on page 366



Shell Set Core

The sequence of operations in West's Shell Piling System has an important bearing on the stability of the pile.

First the precast shoe and reinforced concrete sectional shell are driven to a predetermined "set" in the load-carrying stratum and the reinforced concrete core is then cast in-situ, thus assuring stability of the pile whilst the core is not fatigued.

The system has a number of other advantages: Bearing capacity of each pile can be calculated and the toe resistance and skin friction resulting from the driving of the pile are retained.

The pile has a constant cross-section.

There is minimum shell wastage since extension while driving is a basic operation and only the top shell may have to be cut to take the bearing cap.

Please write for our latest publications

WEST'S SHELL PILING SYSTEM

WEST'S PILING & CONSTRUCTION COMPANY LIMITED

Foundation Specialists. Design and Construction in Reinforced Concrete
BATH ROAD · HARMONDSWORTH · MIDDLESEX. Telephone: SKYPORT 5222
Branches in London · Bristol · Birmingham · Manchester · Glasgow
Australasia: West's Shell Piling (A/sia) Pty Ltd, Melbourne, Sydney, Adelaide & Wellington N.Z. Southern Africa: The Roberts Construction Co. Ltd, Johannesburg. France: Compagnie Générale de Construction de Fours, Paris. Ireland: Farrans Ltd, Dunmurry, Belfast

W P & C CO

AS

Thermal Insulation?

Progressive People use . . . . . .

EVO-STIK 'Impact'

Ask Evode about Thermal Insulation. Find out now why EVO-STIK 'IMPACT' means faster, more efficient and cheaper answers to *your* problems of bonding. The trickiest surfaces; the widest variety of Thermal materials can be bonded permanently; at any angle, with EVO-STIK 'IMPACT'. Why waste time, money and tempers with plugs, jigs and clamps when EVO-STIK 'IMPACT' contains the answer to all your problems of bonding?

Jablite, Polyzote, Isocolor, Flamingo, etc., for which special Evo-Stik 715 is available.

Brushes and tools can be cleaned with Evo-Stik 191 Cleaner.

ILLUSTRATED BOOK '528—Joining in Modern Technology'.
This illustrated brochure proves how a great variety of insulating materials can be bonded with less cost, less waste and more speed using Evo-Stik 'impact' adhesive.
Write for your copy please.

EVO-STIK 'impact' adhesive

Evo-Stik 'Impact' Adhesive is a Registered Trade Mark

EVODE LTD. (Industrial Adhesives Div.), COMMON RD., STAFFORD
TEL: 2241 (5 lines)
LONDON OFFICE: 82 VICTORIA ST., S.W.1. TEL. ABBEY 4622/3/4
Manufactured in Eire by Evode Industries Ltd., Swords, Co. Dublin.

Please send me brochure giving technical details for the use of Evo-Stik 528 in Thermal Insulation:

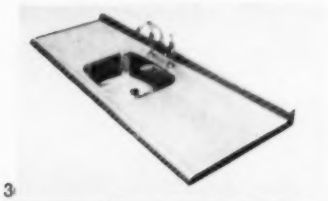
Name .....

Address .....

..... AR/12

PLEASE SEND DETAILS OF 715

continued from page 364]



3

4

3, 4, general view and detail of sink unit with rounded, Formica-covered edges.

their own 'round edge' designs made up in the same way.
Graceline Units Ltd., West Drayton, Middlesex.

A good-looking domestic boiler

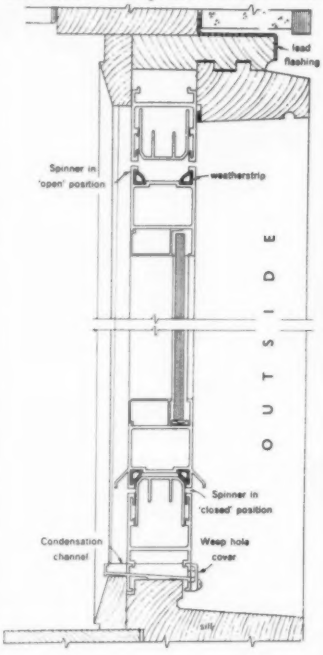
The illustration, 5, shows Neville Conder's casing for the Tayco Thermatic 25. This is a solid fuel domestic boiler with a rating of 25,000 Btu and is a little sister to the same firm's Super Thermatic which was put on the market about a year ago. It has a boiler which is described as 'quartic.' This means that it is square on plan top and bottom and circular on plan in the middle, a form which is reputed to be of special efficiency. The other point about it (apart from appearance, which is excellent) is that it has an enclosed shaker and deep ashpan which together cut down to a minimum the puff of ash caused by riddling. The stove can be got in

5, the Tayco Thermatic 25 boiler.

five colours as well as white and costs 24 guineas retail.
Robert Taylor and Company Limited, 170-172 Victoria Street, London, S.W.1.

The 'spinner' window

Williams and Williams, with their 'Spinner' window, have made a new contribution to the problem of cleaning windows in air-conditioned buildings. This is a horizontally pivot-hung aluminium window, designed normally for double glazing; but instead of closing on to the usual complicated system of reversed rebates, the pivoted light is designed to spin in the clear. When it is to be closed, a key is turned and four aluminium channels advance from behind the fixed frame and close against a pair of continuous neoprene weather strips. The advantage of this is, first, that when the window is closed, there is positive double seal



6 VERTICAL SECTION

against the escape of conditioned air to the outside. Second, that the escape of air during cleaning is limited to the second or so which it takes to spin the window once through 360°. For once the window has been spun it may be locked, the former outside face may be cleaned and it may be left until the next time of cleaning—there is no need to spin it back again.
Williams and Williams Limited, 31 High Holborn, London, W.C.1.

Prefabricated tile partitions

Pilkingtons Tiles Limited have brought into the market an interesting rival to the terrazzo partition. It is a ceramic tile partition, made up in panels of up to 6 ft. by 3 ft. in size and in thicknesses of 1¼ in., 1½ in. and 1¾ in. The two outer

7, a section of tiled partition being lifted into place.

surfaces can be made of any of the 22,000 standard glazed tiles on the maker's books and are joined together by ceramic spacer dises which leave a space between. The partitions are, therefore, relatively light for handling. When they are in position

[continued on page 368

A LUMENATED CEILING WAS CHOSEN for the Catalogue Hall, hub of the new Library of Sheffield University, This 3,714 sq. ft. light source will diffuse both daylight and artificial light without glare or shadows, giving even, efficient lighting throughout the entire hall.

ARCHITECTS: *Gollins, Melvin, Ward & Partners*

LUMENATED CEILINGS LIMITED

A member of the Hall-Thermotank Group.
ALLIANCE HOUSE, CAXTON STREET, SW1. *Telephone:* ABBEY 7113
TGA 182

MOISTOP
TRADE MARK

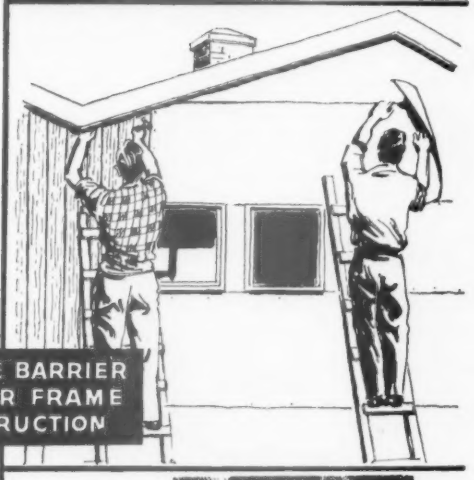
POLYTHENE COATED

REINFORCED
MOISTURE VAPOUR BARRIER

SARKING UNDER TILES AND SLATES

MOISTOP — is a SISALKRAFT product reinforced with unspun sisal fibres in the longitudinal and cross directions. The fibres are totally enclosed by two layers of high grade bitumen, which in turn are faced with tough, kraft paper, and one surface is coated with a layer of POLYTHENE.

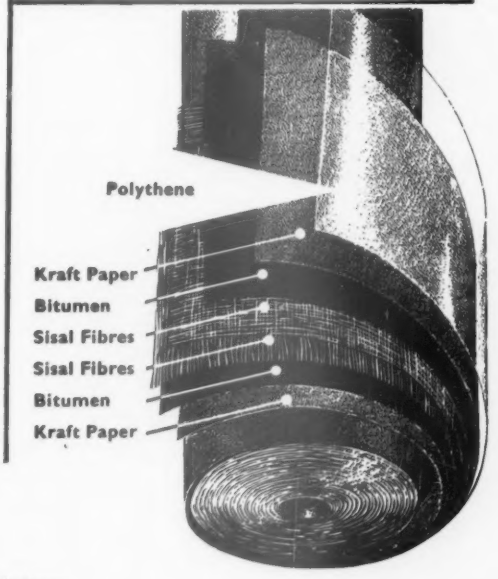
The result of this combination is an effective MOISTURE VAPOUR BARRIER that combines the strength of SISALKRAFT with the virtues of POLYTHENE.



MOISTURE BARRIER IN TIMBER FRAME CONSTRUCTION

APPLICATIONS

Sarking under tiles and slates
Moisture barrier in timber frame construction
Under timber floors
Moisture and air stop in walls
Underlay to concrete
Separation layer between concrete
Curing concrete
Form lining
Protection from frost
Temporary tarpaulin



A PRODUCT OF BRITISH SISALKRAFT LTD

Information and samples from the
SOLE DISTRIBUTORS

J.H.SANKEY & SON LTD. *Established over a Century*

ESSEX WORKS · RIPPLE ROAD · BARKING · ESSEX

PHONE: DOMinion 6666
GRAMS: Brickwork Barking

continued from page 366]

the hollow core is filled with concrete. *Pilkingtons Tiles Limited, Clifton Junction, near Manchester.*

Anglo-Italian curtain wall alliance

The news that Crittall have come to an agreement with Curtisa SpA, of Bologna, concerning the exchange of experience on aluminium curtain walling is very welcome. Without going so far as to concede that Italian aluminium detailing is in all points preferable to our own, there is no doubt that the art of aluminium extrusion is more developed in Italy than over here. It is not only that the best Italian curtain walls are more sophisticated, but that they are in many points technically superior. Examples of these are the exploitation of the 'clip-on' section and the use of a more elaborate detail to avoid the 'cold bridge' effect. These little Italian triumphs in matters of technical detail are at first sight unexpected, as the Italian building industry as a whole is more dependent on craft as opposed to industrial techniques than ours. But we must remember that the North Italians had about a five years' start over us in the construction of tall buildings We must remember also the fine metal work tradition which has always flourished in Bologna and Milan. In all events we congratulate Crittall on a most imaginative tie-up.
The Crittall Manufacturing Company Limited, Braintree, Essex.

CONTRACTORS etc

University Library, Sheffield. *Architects:* Gollins, Melvin, Ward & Partners. *General contractors:* W. J. Simms, Sons & Cooke. *Sub-contractors: Mechanical, heating and air conditioning:* G. N. Haden & Sons. *Air conditioning ducting:* Andrew Machine Co. *Library book-stacks and shelving:* Roneo Ltd. *Structural steelwork:* Thos. W. Ward Ltd. *Portland stone:* Bath & Portland Stone Firms Ltd. *Fire detection installation:* The Pyrene Co. *Lumenex ceilings:* Lumenated Ceilings Ltd. *Lifts:* Otis Elevator Co. *Metal windows, doors, ventilators and frames:* Mellowes & Co. *Glass lens rooflight:* Lenscrete Ltd. *Collapsible gates:* The Bolton Gate Co. *Paropa roof paving:* Frazzi Ltd. *Fibrous plaster and acoustic tile ceilings, fibrous plaster mullion casings:* Claridges (Putney) Ltd. *Terrazzo paving:* Hodkin & Jones Ltd. *Asphalt tanking:* Val de Travers Asphalte Ltd. *Asphalt paving and cork insulation:* Limmer & Trinidad Lake Asphalt Ltd. *Tier 4 suspended ceilings:* Sundeala Board Co. *Marble wall linings, facings and floorings:* Walter W. Jenkins & Co. *Danish panelling:* John Dale Ltd. *Balustrading and handrails:* Grundy Arnatt Ltd. *Sprayed asbestos columns:* Dicks Asbestos & Insulation Co. *Turnstiles:* Dixon Powner & Sons. *Hardwood block and strip flooring:* Acme Flooring & Paving Co. *Plywood panelling:* John P. White & Sons. *Counter and joinery fittings:* Simms Sons & Cooke. *Furniture, cloakroom and other fittings:* Conran Furniture. *Cork, p.v.c. and linoleum flooring:* Horsley Smith & Co. (Hayes). *Window blind gear:* W. J. Furse & Co. (London). *Travelling cradle and gear:* Palmers Travelling Cradle & Scaffold Co. *Double glazing units:* Pilkington Bros. *Main reading room ceiling:* Frenger Ceilings Ltd. *Facing bricks:* Richard Parton (Builders Merchants) Ltd. *Laminated wood stair treads and landings:* Hordern-Richmond Ltd. *Sanitary fittings:* W. Emery & Co. *Timber doors:* F. Hills & Sons. *Extruded aluminium columns:* Northern Aluminium Co. *Steel gate:* Hobbs Hart & Co. *Partition blocks:* Thermalite Ltd. *Protection to Portland stone:* R.I.W. Protective Products Ltd. *Slate copings and cills:* John Fletcher Dixon Ltd. *Stainless steel ventilators:* J. R. Bramah & Co. *Ironmongery:* Smith Bros. & Widdowson Ltd. *Paint:* Jenson & Nicholson Ltd. *Clocks:* Gent & Co. *Electric light fittings:* Troughton & Young (Lighting) Ltd.; The Merchant Adventurers Ltd.; A.E.I. Lamp & Lighting Co. *Modular fittings, lowering gear:* London Electric Firm Ltd. *Curtains:* Liberty & Co.

Methodist Church, Mitcham. *Architects:* Edward D. Mills & Partners. *General contractors:* James Longley and Company. *Sub-contractors: Electrical:* Service Electric Company. *Flooring:* The Marley Tile Co.; Bennetts Wood Flooring (Tungit) Co. *Heating:* Advanced Heating & Air Conditioning Co. *Roofing:* Permanite Ltd.: Broderick Insulated Structures Ltd. *Structural steel:* R. O. Wright & Co. *Asbestos cement panel:* The Universal Asbestos Cement Manufacturing Co. *Bricks:* London Brick Company; Sussex & Dorking United Brick Companies. *Doors:* Thames Plywood Manufacturers Ltd.; John Sadd & Sons.; Esavian Limited. *Ironmongery:* A. J. Binns Limited. *Light fittings:* Rotaflex (Great Britain) Ltd.; Merchant Adventurers of London Ltd.; Frederick Thomas & Co.; A.E.I. Lighting Group. *Paint:* Hadfields (Merton) Limited. *Roller shutters:* Shutters Contractors Ltd. *Roof lights:* Williaam J. Cox Limited. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *W.C. partitions:* William Mallinson & Sons. *York stone:* S. Marshall and Sons.

Roman Catholic Church, Lancaster. *Architect:* Tom Mellor. *General contractor:* The Warren Construction Co. *Sub-contractors: Steelwork:* The Bamber Bridge Steel Co. *Wood block floors:* Hollis Bros. *Pews:* Walmsley's Furniture & Joinery Ltd. *Special furniture:* F. L. Treasure; Hayes and Finch Limited. *Heating:* John Grundy Limited. *Electrical installation:* W. H. Inman Limited. *Copper roofing:* A. Higginbotham and Sons.

Reconstructed Parish Church, Tolworth. *Architect:* Kenneth Wood. *General contractor:* Tom Porter & Son. *Sub-contractors: Bored pile foundations:* The Cementation Co. *Structural components and main arch:* Kingston (Architectural Craftsmen) Ltd. *Post-stressed lintol:* Cable Covers Ltd. *Roofing:* Permanite Ltd. *Flooring: Alufloor and resurfacing:* G. C. Constructional Flooring Co.; *wood block:* Horsley, Smith & Co.; *cork tiling:* Thames Flooring Co. *Heating:* Weatherfoil Heating Systems Ltd. *Electrical installation:* Davenant Electrical Co. *Lighting fittings:* Merchant Adventurers of London Ltd.; Philips Electrical Ltd. *Carpeting:* Heal & Son Ltd. *Mosaic:* Dennis M. Williams Ltd. *Door and window furniture:* Allgood Continental Ltd.; Arens Controls Ltd. *Paints and finishes:* Thos. Parsons & Sons Ltd.; Floor Treatments Ltd. *Signwriting:* Hastings Signs.

Flat in Eaton Square, London. *Contractors:* Ashby and Horner. *Loose furniture made by* F. E. Ward. *Soft furnishings by* Woolland Bros. Limited. *Radio consultant:* Com. K. F. Paring (Period High Fidelity).

MAXIMUM EFFICIENCY
SAFETY MOTOR
VERY FINE ATOMISATION
AUTOMATIC CONTROL
REGULATED COMBUSTION
SIMPLE MAINTENANCE
AUTOMATIC LUBRICATION
AUTOMATIC LUBRICATION
LONGER LIFE
SELF CLEANING NOZZLE
Changing to Oil?
• Burns oil of 35 secs. viscosity. Completely automatic on/off operation. Output range of 50,000 to 200,000 b.t.u's.
• Over twice the life expectancy of pressure jet burners. Ultra-quick and simple change of sub-assemblies.
• Pre-mixed air oil ensures better combustion. Large atomiser orifice obviates nozzle blockages.
• Compact size (12½" x 12½" x 7½"). Unique inbuilt pump unit gives up to 10 ft. suction, only one pipe running from tank.
LUCAS
"OIL·O·MATIC" (Regd.)
LOW PRESSURE OIL BURNER - fully automatic!
JOSEPH LUCAS (HYDRAULIC & COMBUSTION EQUIPMENT) LTD MARSTON GREEN BIRMINGHAM 33
A subsidiary of JOSEPH LUCAS (INDUSTRIES) LTD.

AT A NEW FACTORY FOR
J. S. FRY & SONS LTD., SOMERDALE

The photograph shows one of several 'Universal' columns, each carrying an estimated load of 1000 tons.

The steelwork of this factory, comprising 2,100 tons, was erected by us in 4½ months.

General contractors: John Knox (Bristol) Ltd.

STEELWORK IS CHEAPER AND READILY AVAILABLE

STEELWORK BY
REDPATH BROWN

Branches: Edinburgh, Glasgow, London and Manchester

STEEL
STRENGTH SECURITY

Architects and consulting engineers know that it pays to specify G.E.C. . .

STATE HOUSE. Architects: Trehearne & Norman Preston & Partners. Builders: Tersons Ltd. Electrical Contractors: Rashleigh Phipps & Co. Ltd. G.E.C. equipment: 2-Main Switchboards, Cubicle Pattern, 2-M.W. Switchboards, all 500 volt Switch and Fusegear, Rising Main Service Units, Alum. Rising Main Busbars, Steel Cable Trunking, Conduit.

MINSTER HOUSE. Architects: Trehearne & Norman Preston & Partners. Builders: John Mowlem & Co. Ltd. Electrical Contractors: Rashleigh Phipps & Co. Ltd. G.E.C. equipment: Main Switchboard all 500 volt Switch and Fusegear, Rising Main Service Units.

G.E.C. INSTALLATION

electrical contractors know that it pays to use G.E.C. equipment.

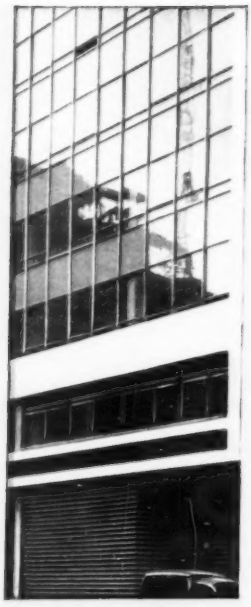
From local offices strategically located throughout the country, the Installation Equipment Division of G.E.C. gives unrivalled, on-the-spot service right through from initial planning to final completion. Add to this a jealously guarded reputation for reliability, and it becomes obvious why G.E.C. switchgear, conduit, and other electrical accessories in vast quantities are being used in many of Britain's finest buildings, including these exciting new London landmarks.

BUCKLERSBURY HOUSE. Architects: Owen Campbell Jones, F.R.I.B.A., F.R.I.C.S. Builders: Humphreys Ltd. Electrical Contractors: Troughton & Young Ltd. G.E.C. equipment: Distribution Switch and Fusegear, Conduit, 400 and 100 amp. Busbar Trunking, Floor Ducting, Electric Wiring, Accessories.

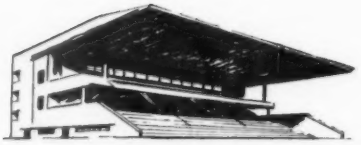
EQUIPMENT DIVISION

THE GENERAL ELECTRIC CO. LTD.
MAGNET HOUSE, KINGSWAY, LONDON, W.C.2

SWITCH AND FUSE GEAR
H.R.C. FUSES
OVERHEAD BUSBARS
RISING MAINS
CONDUIT
CABLE TRUNKING
UNDERFLOOR CABLE DUCTS
ELECTRIC
WIRING ACCESSORIES
BELLS



Office Block—High Holborn.
Architects George, Davies and Webb.



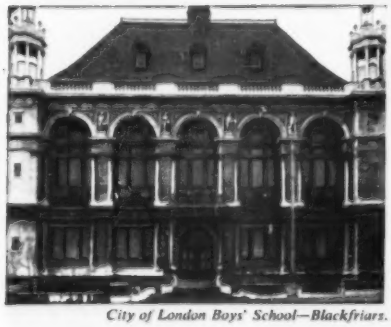
Nuffield Trust Hostel—Regents Park. Architect Eric S. Brown B.Sc., F.R.I.C.S.

Key Glass Works—Harlow, Essex. Architect Eric S. Brown B.Sc., F.R.I.C.S.

everywhere

Smithson

paints



City of London Boys' School—Blackfriars.

Notre Dame Church—Leicester Square.
Architect Professor Corfiato F.R.I.B.A., F.S.A., S.A.D.G.

THOMAS SMITH & SON LTD.,
238/240, Whitechapel Road,
London, E.1.

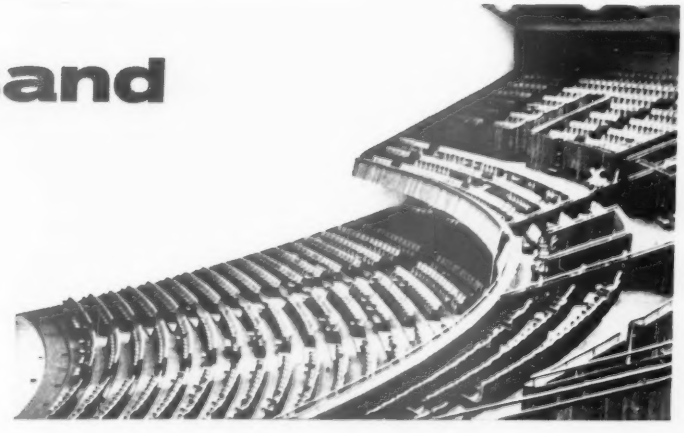
T56

Take a seat...

Tip-up auditorium seating is our business. Lecture theatre seating with writing ledge; tip-up chairs upholstered in foam rubber for permanent floor fixing; economical tip-up seating for assembly halls where the floor must occasionally be cleared.

or two

or a thousand



All these and more make up our range. Plus all the help and advice, based on intimate knowledge of the subject and long association with architects and their problems, which we can give.

Have you seen our illustrated booklet? A copy will be sent on request.

Cox MAKE SEATING A SCIENCE

COX & CO. (WATFORD) LTD. · WATFORD BY-PASS · WATFORD · HERTS

Telephone: Watford 28541

Architects: John Grey & Partner.
Contractors: J. Lovell & Son Ltd.

PRESSURE PILING WAS SPECIFIED....

. . . for the Peabody Donation Fund developement scheme at Roscoe Street London, E.C.1.

When piles are required for a project of this nature, the Pressure Piling System is the logical choice. Pressure piles can be cast in situ without vibration. The system can be used even where the headroom is 6 ft., and the piles can, if necessary, be sunk in water.

THE PRESSURE PILING COMPANIES

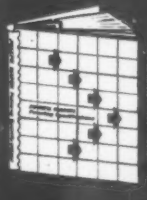
THE PRESSURE PILING COMPANY (PARENT) LTD
637 Old Kent Road, London, S.E.15. Tel: New Cross 0347/8/9

Enquiries for the North of England, Scotland, Northern Ireland and Eire should be addressed to:—
THE PRESSURE PILING COMPANY (NORTHERN) LTD
Charnley Fold Lane, Bamber Bridge, Nr. Preston. Tel: Preston 85723

Architects and Engineers are invited to write for a free copy of "The Pressure Piling System". It gives Technical data on piled foundations and underpinning for rapid vibrationless construction and repairs.

THE ORIGINAL AND LARGEST BORED PILING SPECIALISTS IN THE WORLD

of course mason's add something extra to their paint



Practising architects are invited to write for this helpful book—"Joseph Mason Painting Specifications"

You won't find better paint anywhere, but you will find "something extra" in the service given freely by the Joseph Mason Technical Team. Incidentally, all the B.S.S.2660 shades are available in Masopar.

joseph mason paints

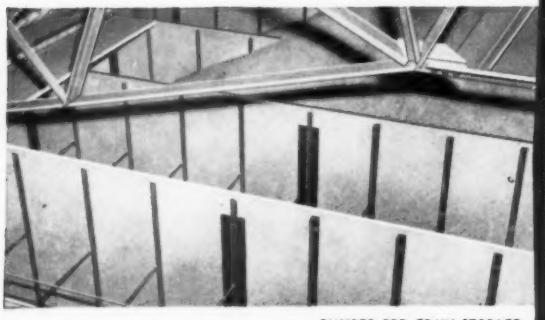
JOSEPH MASON AND COMPANY LIMITED, DERBY. TELEPHONE: 40691-2-3

MANUFACTURERS OF VERY GOOD PAINTS SINCE 1800

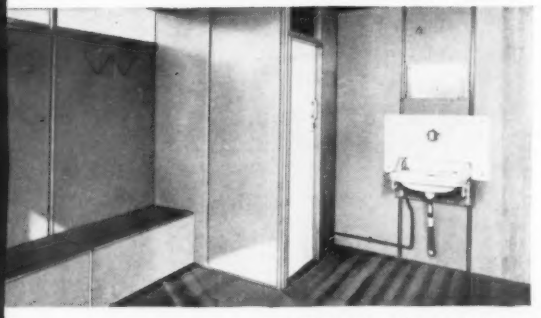
THERE'S PLENTY OF SCOPE-

PLIMBER FOR COUNTERS & PARTITIONS

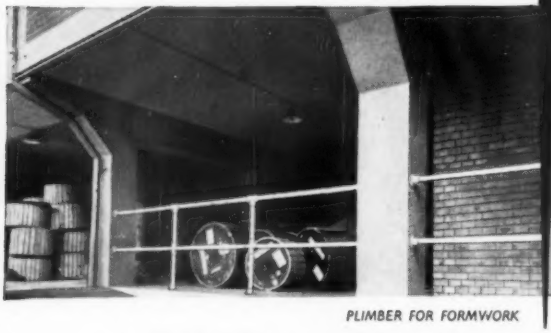
PLIMBER FOR ROOF DECKING



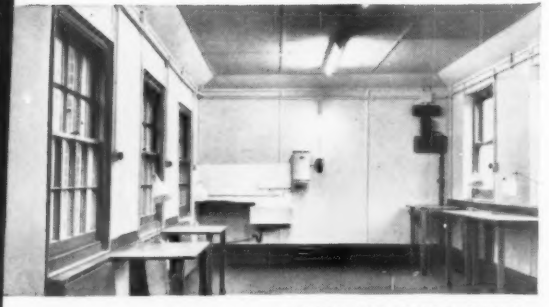
PLIMBER FOR GRAIN STORAGE



PLIMBER FOR LOCKERS & LININGS



PLIMBER FOR FORMWORK



PLIMBER FOR FLOORS & CEILINGS

FOR THE NEW PLIMBER 45

Britain's most versatile Chipboard

With its increased strength, wear resistance, and water resistance, Plimber 45 is a highly satisfactory sheet material for such heavy-duty uses as industrial flooring, racking for engineers' stores, concrete formwork above or below ground, and a great many other load-bearing purposes; equally it is ideal for making cupboards, fitments or furniture, as well as partitioning, lining and panelling.

PLIMBER WOOD CHIPBOARD

Standard Size . . . . . 8ft. x 4ft.
Maximum Size . . . . . 16ft. x 4ft.

PLIMBER WOOD CHIPBOARD

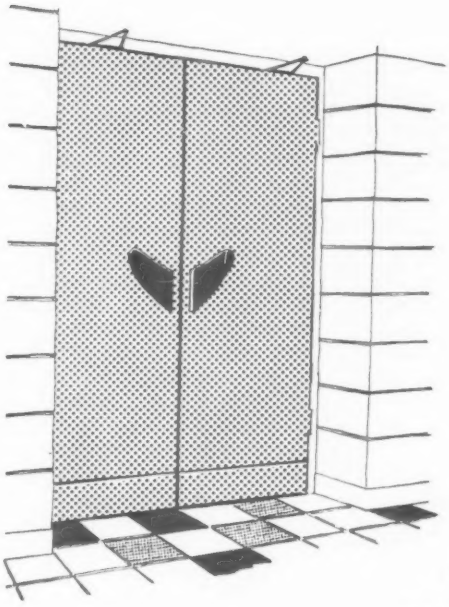
Thicknesses . . . . . $\frac{1}{2}$in. & $\frac{3}{4}$in.
Density . . . . . 45 lbs/cu. ft.

PLIMBER WOOD CHIPBOARD

Grades : Standard PLIMBER 45
Wood Veneered PLIMBER

BRITISH PLIMBER

BRITISH PLIMBER LIMITED
Rainham, Essex *Telephone : Rainham 5262*



Only the SLIM arms can be seen

The "No. 500" is a new door closer designed for use when the appearance of the door and surroundings are of first consideration. With nothing visible except the slim arms, which are styled to be as streamlined and unobtrusive as possible, it achieves complete concealment without loss of power or door control. The "No. 500" is suitable for internal single-action doors not exceeding 7′ by 3′ in size, and 70 lbs. in weight.

- Smooth and silky check-action.
- Bounce completely eliminated.
- Closing and latch speed fully adjustable.
- Stand open device put in and out of action as desired.
- Body only 1¾″ wide, overall length 13″.
- Opens to 90° or 180° according to fixing position.
- No oil leakage.

N°500

PATENTS PENDING

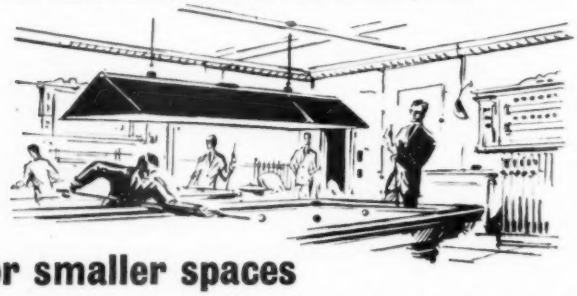
Concealed Overhead Door Closer

William Newman & Sons Ltd. HOSPITAL STREET BIRMINGHAM 19

Warming space the natural way

Air Heating

for large premises One or more Airheat Minor units. One unit has a heating capacity of approximately 60,000 cu. ft.



for smaller spaces

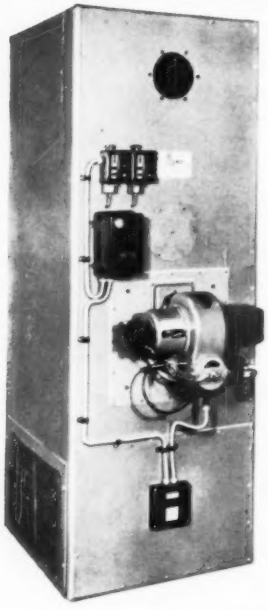
Airheat Midget Mk. II is suitable. It has a heating capacity of approximately 30,000 cu. ft.

* 80% thermal efficiency guaranteed
* Up to 50% cheaper to run than other systems
* Thermostatic control maintains even temperature and saves fuel
* Distribution direct or through ducting
* Will circulate cool air in summer

Airheating Ltd Murray St Paisley Scotland

TEL: PAISLEY 3244/5 GRAMS: AIRHEAT PAISLEY

London Office: 28 Victoria St London SW1 Tel: Abbey 6451



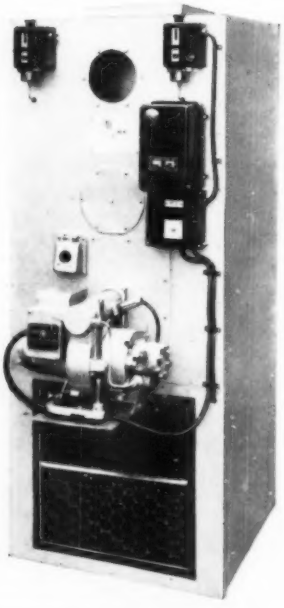
AIRHEAT MINOR

Output, 100,000 to 250,000 B.T.U./hr.;
fuel consumption, 0.71 to 1.78 g.p.h.;
fuel, 35 secs. gas oil;
air volume, 1,400 to 2,300 c.f.m.;
dimensions, 32″ x 32″ x 88½″ high.

AIRHEAT MIDGET MK. II

Output 40,000 to 100,000 B.T.U./hr.;
fuel consumption, 0.285 to 0.71 g.p.h.;
fuel, 35 secs. diesel oil;
air volume, 400 to 1000 c.f.m.;
dimensions, 26″ x 24″ x 63″ high.

for larger premises — larger units are available



P.2616.B

BIGGEST AND WIDEST RANGE EVER OF CARBIDE TIPPED DRILLS!

Pioneers in carbide tipped masonry drills, the Rawlplug Company has gone still further ahead with the widest range of percussion, vibration and rotary drills obtainable anywhere. Whether its for hand or power use, you're bound to find the type and size you want in the Rawlplug range.

'DURIUM'
TIPPED MASONRY DRILLS

So famous have these amazing drills become that the name DURIUM tends to be used for any drill of its general type. *Don't be misled by this.* DURIUM means the special New Process, almost diamond-hard, carbide tip developed and made only by the Rawlplug Company. *No* other drill is a genuine Durium. DURIUM Drills give really sensational cutting performances in brick, tile, cement, slate, etc. They are silent in operation and have a quite exceptional long-service capacity for withstanding the abrasive action of masonry that so quickly ruins ordinary drills. Another exclusive feature of Durium Drills is their patented rapid-helix flute, which forces out spoil and prevents clogging. Only a Durium Drill—a *genuine* Rawlplug Durium—gives such life and service. First resharpening is FREE!

For use in Wheelbrace or slow speed electric drill

17 sizes 5/32" to 1" cutting diameter and **11** *long series* ¼" to 1" cutting diameter for up to 16" drilling length.

'DURIUM' TIPPED HAMMER DRILLS

For percussion drilling in hard materials such as Granite, Blue Bricks, Concrete etc., Durium Hammer Drills have a very much longer life than ordinary percussion drills. They can be used in most electric Hammers and some type of Pneumatic Hammers. 13 sizes from 7/16" nominal drill diameter to 1¼".

'DURIUM' TIPPED GLASS DRILLS

For use in glass, china, vitrolite, pottery, etc. Can be used in a wheelbrace or slow speed electric drill. 9 sizes from ¼" to ½" cutting diameter.

'VIBROTO'
HARD TIPPED DRILLS FOR VIBRATORY DRILLING

Vibroto Drills are specially manufactured for use with the Vibroto Drilling Machine, —a high efficiency power tool which allows of two vibratory actions (Light Rapid and Heavy Slow), and also a rotary action for use with standard Durium masonry Drills or ordinary Twist Drills. With their special cutting angle metallic carbide tips, and the high grade steel shanks heat-treated to withstand abrasion, Vibroto Drills put up spectacular performances in the drilling of concrete and other hard materials. *Demonstrations* can be carried out by Rawlplug Technical Representatives anywhere in the British Isles.

10 sizes 5/32" up to 15/32" cutting diameter.

'RAWLCRETE'
TUNGSTEN CARBIDE TIPPED (ROTARY) CONCRETE DRILLS

These drills are designed for hole boring in concrete, hard brickwork and tiles with portable rotary action tools. They have from four to six cutting edges (depending on size) and if one should be damaged the remainder will go on cutting. Spoil is automatically carried away through the cored shank and ejected via the slot.

EXTENSION TYPE DRILLS ANY DEPTH

By adding extension rods to the Extension Type Rawlcrete Drill, any depth of hole can be drilled.

26 sizes ¼" up to 2" cutting diameter.

RAWLPLUG FIXING DEVICES AND TOOLS FOR SPEED AND RELIABILITY

WRITE NOW for illustrated literature describing fully these and other Rawlplug high performance drills and power tools.

RAWLPLUGS

THE RAWLPLUG COMPANY LTD.
CROMWELL ROAD, LONDON, S.W.7.
Telephone: FREMANTLE 8111 (10 LINES)
Telegrams: RAWLPLUG SOUTHKENS LONDON 8414

The World's Largest Manufacturers of Fixing Devices.

7 GOOD REASONS WHY YOU SHOULD CHOOSE A WANDSWORTH INCINERATOR

- All Wandsworth incinerators have that incomparable exclusive feature—a BUILT-IN FAN. Fume free combustion is assured.
- Operation is automatic—insert the articles for disposal and walk away. The timing device will do the rest.
- Adjustable timing—to suit any particular need—at the turn of a screw.
- Easy installation.

- Big capacity. From the "Bunnie" to the "Warden" Wandsworth incinerators cope just that much better.
- Long service life. Streamlined design and rugged components reduce maintenance to a simple minimum.
- Common flue arrangements. Combination of the special Wandsworth feature—the BUILT-IN FAN—and a simple relay system, ensures that fumes cannot escape through idle machines. Immediately one machine is used fans throughout the whole installation operate.

THE WANDSWORTH WARDEN (above) SOLVES A MAJOR PROBLEM—

the BULK and centralised disposal of surgical and maternity dressings, sanitary towels, documents, cardboard and other combustible materials. Foot bar opens access door and commences burning cycle—leaving both hands free. Consumption 3 kW. Please ask for copy of Burning Test Report giving detailed performance figures.

THE FAMOUS WANDSWORTH BUNNIE

shown below, is available for surface, flush or pedestal mounting.

SURFACE BUNNIE

Clean, hygienic, efficient, the Bunnie is suitable for factories, offices, hotels, restaurants, public toilets, hospitals, nurses' homes, etc. Models for A.C. or D.C. mains, consumption 800 watts. Capacity: female staff of 100-150.

FLUSH BUNNIE

Technically similar to the Surface Bunnie, the Flush Model saves space and is extremely neat where there is provision for ducting in the walls. Depth of only 9½ inches enables it to be fitted almost anywhere, particularly new buildings.

Literature gladly sent on request.

Wandsworth

ELECTRICAL MANUFACTURING CO. LTD.

(Dept. AR3.) Albert Drive, Sheerwater, Woking. Tel: Woking 3506

know your Flush Door

First of a series of six

Flush Doors can be a headache

Why design your own when the Country's leading specialists are available?

For over a quarter of a century LEADERFLUSH have been designing and manufacturing FLUSH DOORS of outstanding quality. Over 2,500,000 are now in use. When considering the question of FLUSH DOORS consult LEADERFLUSH the people with the 'know-how' and guarantee satisfaction.

Specify **leaderflush**

Britain's Finest Flush Door

LEADERFLUSH (Doors) **LTD . TROWELL . NOTTINGHAM**

Telephone: Ilkeston 623 (5 lines). Telegrams: "LEADAFLUSH" ILKESTON, NOTTINGHAM

LONDON OFFICE: LEADERFLUSH (Doors) LTD., BUSH HOUSE, ALDWYCH, W.C.2. Tel. Covent Garden 2243

ARCHITECTS ARE INVITED TO MAKE FULL USE OF OUR ARCHITECTS ADVISORY SERVICE

591 Cogent

Though surfaces vary . . .

the specification

remains the same

(Artist's impression)

The "beauty" of Number Seven decorative finishes is two-fold—their lasting "eye" appeal and their unique variety of applications both interior and exterior. With the suitable primer you can now specify Number Seven Exterior Flat Finish for nearly every standard surface—wood, metal, brick, plaster, concrete—and thus eliminate estimating and ordering complications as well as time wasted in mixing and matching colours. An impressive list of recent contracts is proof of Number Seven's outstanding success in all types of contracts.

59/63 Princes Gate, London, S.W.7

Architects: Messrs. Adie, Button and Partners
Number Seven specified by Messrs. T. Mortimer Burrows and Partners
Painting Contractors: F. W. Barnard Ltd.

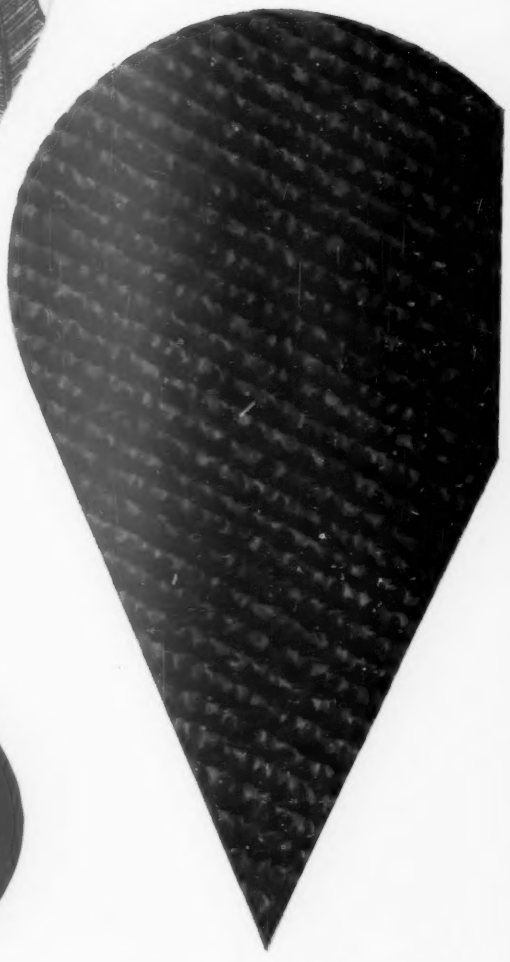
NUMBER SEVEN

NUMBER NINE
Where a textured finish is desired, Cementone No. 9 Waterproof Stoneface Composition is exclusively prepared for brick, cement rendering, reinforced concrete, asbestos-cement, plaster, and compo-board surfaces. Alkali-resistant, No. 9 matures to a natural stone finish and is available in ten colours.

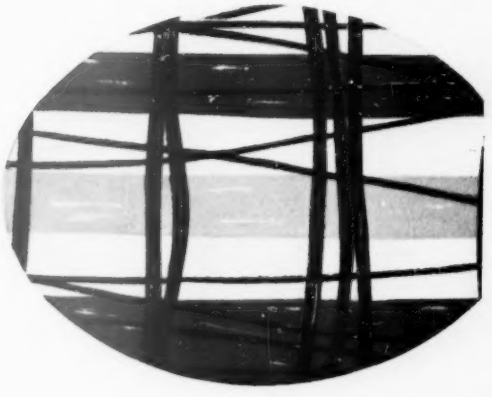
Number Seven is available in a range of fifty-four matching colours as a gloss, satin or interior and exterior flat finish. Write for colour card and standard specifications.

You can depend on Cementone products

JOSEPH FREEMAN, SONS & CO. LTD., CEMENTONE WORKS, WANDSWORTH, LONDON, S.W.18 Telephone: VANdyke 2432 (10 lines)



Bold Brilliance—
in Sanderson Fabrics



Here's excitement and exuberance in the Sanderson manner. Monotone tracery on fine tweed—a large design most effective in a long drape: bold lines on white grounds: close woven heavy tweed and smooth satins for covers.

These designs and colours are among the many in a mid-twentieth century idiom, produced especially to meet today's trends in the field of interior decorating and furnishing.

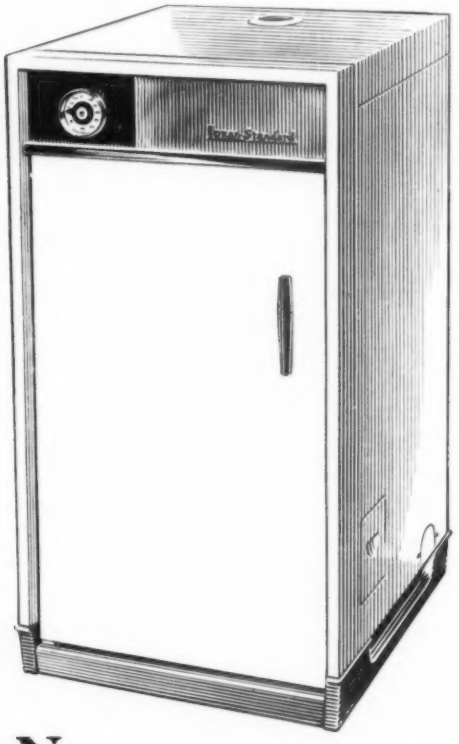
All of them are available in alternative colour-ways, and can be seen at our showrooms throughout the country.

SANDERSON FABRICS

Showrooms: BERNERS STREET, LONDON, W.1

AND AT GLASGOW, EDINBURGH, LEEDS, MANCHESTER, BIRMINGHAM, EXETER, BRISTOL, SOUTHAMPTON AND BRIGHTON

elegant in design
efficient in operation



NOW—central heating boilers that look *right* in today's kitchens. Ideal Elite boilers combine an entirely new concept of design with high functional efficiency and a reasonable price! For oil: the Ideal Paragon Elite. For solid fuel: the Ideal Classic Elite. They are both sectional boilers available in four sizes—from 35,000 to 65,000 B.T.U's per hour. This covers the vast majority of houses and brings within reach of many —full central heating with radiators, plus indirect hot water. For full details of the new Ideal Elite boilers, write to the address below.

IDEAL Elite boilers

for oil and solid fuel

IDEAL BOILERS & RADIATORS LTD · IDEAL WORKS · HULL

AUSTIN REED
(CARDIFF)
Architect:
Westwood Sons
& Partners

Tomorrow's needs must be planned for, today

Architects and Executives today, concerned with interior planning, need to be in touch with modern interior sales presentation. New developments in materials and merchandise demand it.

The George Parnall organisation base all work carried out for clients on a true appreciation of this need, interpreted according to the highest standards of contemporary design.

Our consultant designers welcome an opportunity to collaborate with architects alive to the urgent needs of tomorrow.

GEORGE PARNALL & CO. LTD.
Craftsmen and Designers
4 BEDFORD SQUARE, LONDON, W.C.1
Telephone: MUSeum 7101

REPLANNING AND MODERNISATION

Left
WARING AND
GILLOW
China Dept.

Right
J. F. TAYLOR & Co. Ltd.
BRISTOL
Dress Materials Dept.

Heard the news from WEYROC?

As a result of increased production from new automatic plant . . .

WEYROC has always had the reputation of being *the board you can trust*—to do so many jobs, so well. Now, new developments put WEYROC even further ahead as the *board of choice* for the Building and allied Trades.

Blue Label WEYROC has been discontinued and in its place comes a new, improved form of WEYROC . . . in quantities never possible before. This new, improved WEYROC is lightweight, strong, stable and durable, with smooth-sanded moisture-resistant surfaces for easier working. In short, a very much more *precise* board than before. As such, it has marked advantages for almost every job in building* which calls for flat-form timber. This new WEYROC is available . . .

in a choice of boards.

weyroc '34'
layer construction board
8′ x 4′ boards

weyroc '38'
graded density board
12′, 8′ and 4′ x 5′8″ boards

Both boards produced in ½″, ⅜″ and ¾″ thicknesses nominal and cost between 1/1½d. and 1/6d. per sq. ft. (according to thickness).

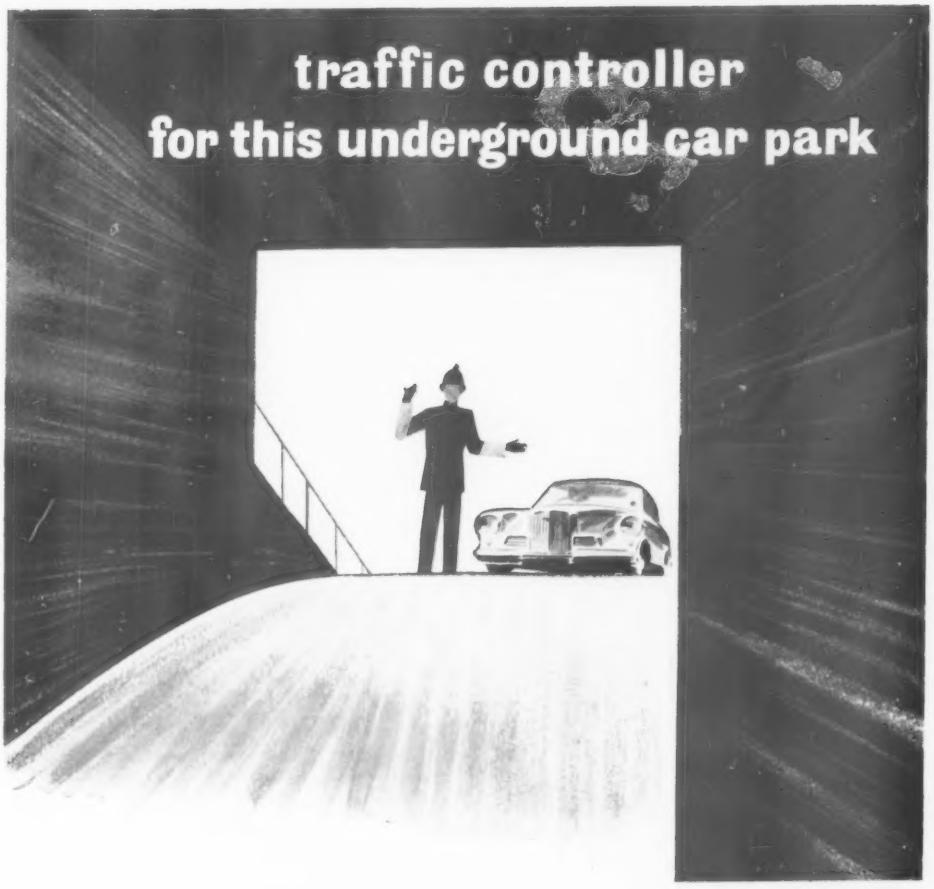
Although these Boards are almost identical in strength characteristics and surface properties, we recommend WEYROC '34' particularly for the Building Trades. This is because it is available in the standard building board size and because it has a slightly higher impact resistance.

* **N.B.** *These Boards are not suitable for suspended flooring.*
As Blue Label WEYROC has now been discontinued, this means that there is at present no WEYROC board for flooring. However, it is our intention to produce a new, special flooring grade in the very near future.

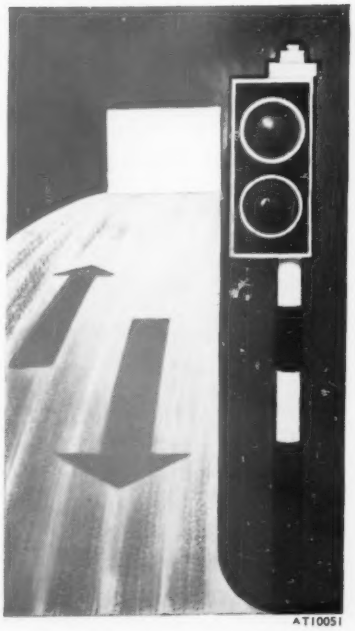
weyroc
one of the world's great man-made materials

WPS 70

WANTED



The increasing use of elevated and underground car parks, though solving the parking problem, sometimes creates problems of its own. Fortunately more and more authorities are realising that the ATE "Electro-matic" controller is the solution. This ingenious device acts as the driver's forward eye, enabling him to know exactly when to drive in or out—thus ensuring greater safety. The "Electro-matic" controller can just as easily control traffic in works precincts too, at level crossings, or at any point where private road or rail movements conflict; in fact, wherever there is traffic.


AT10051

AUTOMATIC TELEPHONE & ELECTRIC CO. LTD.

Strowger House, Arundel Street, London, W.C.2
Telephone: TEMple Bar 4506. Telegrams: Strowger Estrand London
STROWGER WORKS, LIVERPOOL, 7

Bath and panels made from blue 'Perspex' by Thermo Plastics Limited, Dunstable

"This is much better than rockets"

SAID MR. KHRUSCHEV

While visiting the I.C.I. stand at the Leipzig Fair, Mr. Khruschev admired the bath made from 'Perspex'. Now he has one—your customers too can buy one of these gay, colourful baths made from 'Perspex' acrylic sheet.

Coloured or white baths made from 'Perspex' are sold at prices everyone can afford. 'Perspex' is made in the standard sanitary ware colours as well as in a wonderful range of modern colours to suit modern tastes.

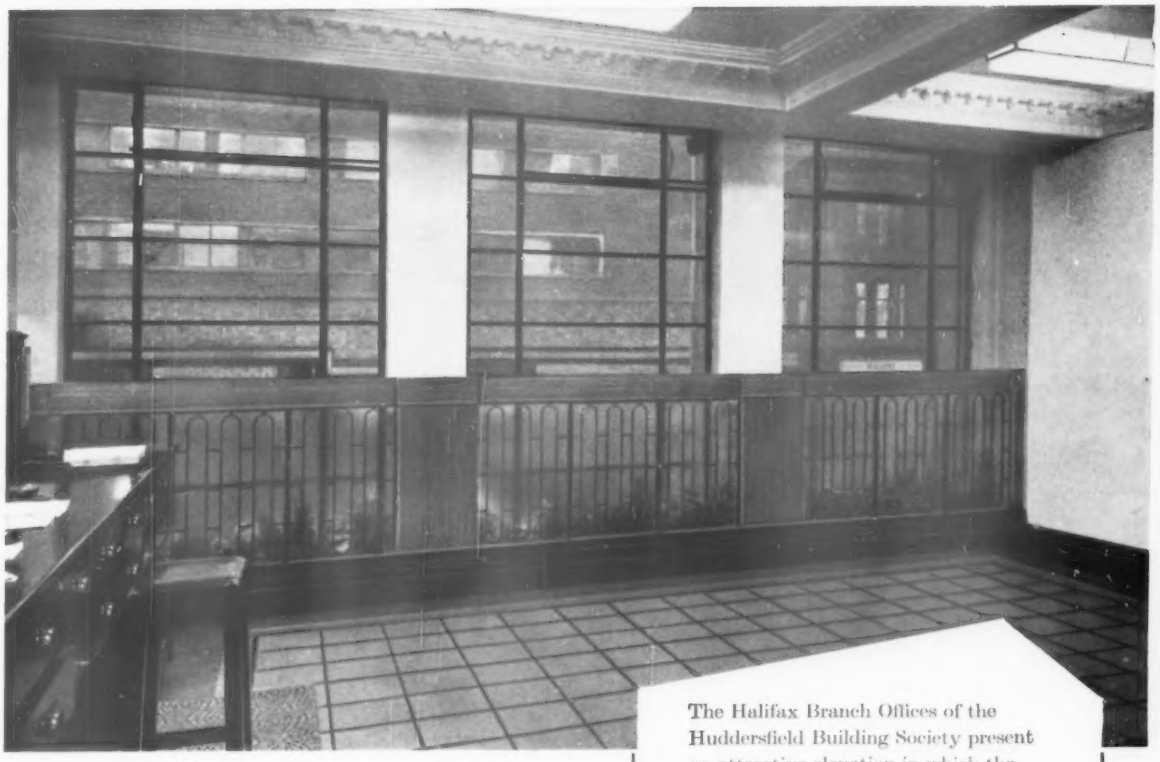
Be right up-to-date — sell baths made from 'Perspex', the best buy for the modern homemaker, builder, or architect.

MAKE SURE YOU STOCK BATHS MADE FROM **'PERSPEX'**

'Perspex' is the registered trade mark for the acrylic sheet manufactured by I.C.I.

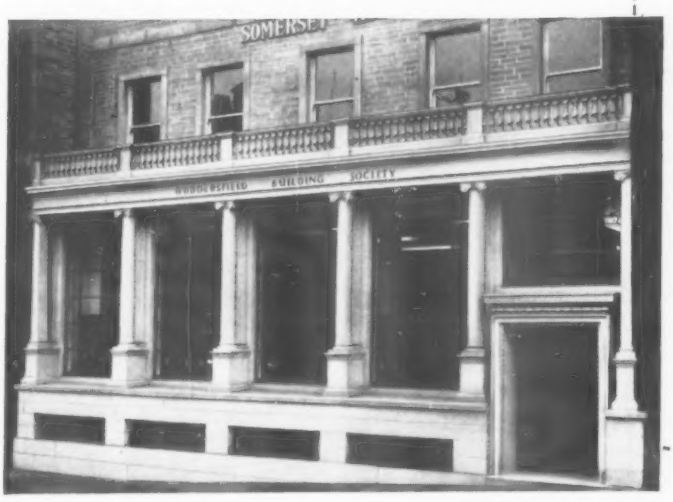
IMPERIAL CHEMICAL INDUSTRIES LIMITED · LONDON S.W.1

P.745



Once again, skirting heating by Crane

The Halifax Branch Offices of the Huddersfield Building Society present an attractive elevation in which the traditional style of 1766 has been faithfully preserved. The interior is bright, pleasant and, although the source of heating is not immediately apparent, always comfortably warm. For the heating system employed, is in fact, far from traditional, being Crane Skirting Heating, one of the most modern and unobtrusive methods of space heating. The panels used here are the 9" Type RC (Radiant-Convector), but there is also Type R (Radiant). **Type R, as well as being made in the 6-inch size, has lately been made available in the 9-inch size for situations requiring additional heating surface.** All are made of cast iron for resistance to damage, and are in 2-foot lengths and 1-foot half sections. Skirting Heating is the perfect modern way of heating any building.



HUDDERSFIELD BUILDING SOCIETY
Architect:
Clifford Hickson, F.R.I.B.A., Huddersfield
Heating Engineers:
T. H. Rayner & Sons Ltd., Huddersfield

CRANE SKIRTING HEATING, BOILERS RADIATORS, VALVES & FITTINGS

B27

CRANE LTD., 15-16 RED LION COURT, FLEET STREET, LONDON, E.C.4. Works: IPSWICH
Branches: Birmingham, Brentford, Bristol, Glasgow, London, Manchester.

EXTRA COVER

season in, season out

This handsome new stand on the Northampton Cricket Club's ground serves its purpose well. During the season it's a pleasant restaurant and bar, with glazed folding doors opening onto the terrace. In winter it becomes an indoor cricket school, the doors firmly closed against wind and weather. Esavian dual-purpose screens enclose the restaurant, can be pushed back to make room for nets.

Well worth investigating, Esavian doors and screens and partitions.

Architects: Sir John Brown
A. E. Henson & Partners

THE ESAVIAN PRINCIPLE
for Folding and Sliding Doors, Windows, Partitions & Screens

Esavian Ltd., Esavian Works, Stevenage, Herts. Tel: Stevenage 500. 185 Tottenham Court Road, London, W.1. Tel: MUSeum 9772.
Esavian Works, Carfin, Lanarks. Tel: Holytown 391.

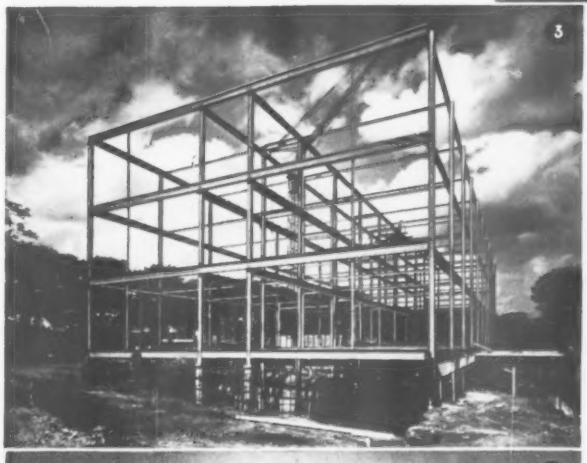
1 Footbridge for Level Crossing in Grimsby.

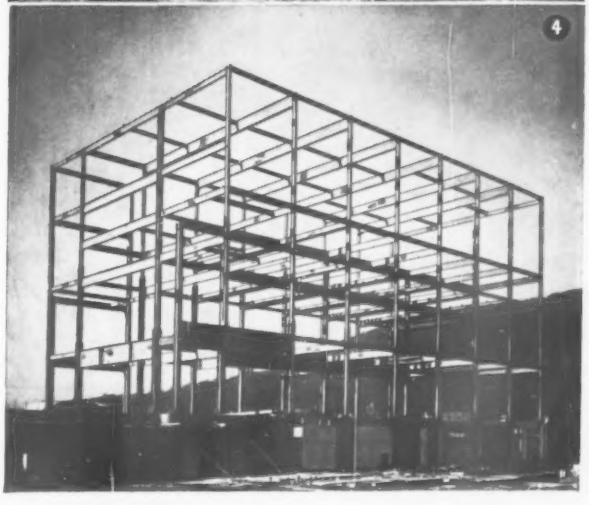
2 Interior view of factory for Messrs. Brook Motors Ltd., Barnsley.

3 Sowerby Bridge Secondary School.

4 Control Room, Services and Welfare Block, Elland Power Station.

STRUCTURAL STEELWORK





BY AUSTINS

SPEED YOUR PROGRAMME. Build in Steel

Readily available

JAMES AUSTIN AND SONS (DEWSBURY) LIMITED

Thornhill Iron & Steel Works, Dewsbury, Yorkshire
Telephone: Dewsbury 1750 (7 lines)
Telegrams: Austins, Dewsbury, Telex No. 55-129

TRADE MARK VULCAN
ESTABLISHED 1850

LONDON OFFICE: Kirkman House,
54A Tottenham Court Road, London, W.1.
Telephone: Museum 1064

H-P 5917

Yes!

Specify the BILSTON

ATLANTA

whatever size

bath is needed

Whatever size a bathroom is to be, a Bilston Atlanta can be specified. Made in five sizes, the Atlanta has the superior Bilston finish and durability, plus design features that make it particularly safe and comfortable. No matter how large the estate, standard specification of the Bilston Atlanta ensures complete satisfaction The Atlanta has been selected for the Design Centre and costs no more than an ordinary bath.

- Atlanta
- Magna
- Cresta
- Marina
- Mermaid
- Bermuda

A BILSTON BATH

ALL THIS WITH THE ATLANTA!

Flat Bottom—the Atlanta flat bottom helps to prevent slipping . . ensures comfort. Particularly suitable where a shower is to be fitted.

Safety—the low sides make the Atlanta safer for young and old. It can be fitted to give an overall height of only 16".

Taps can be fitted centrally, or on either corner to facilitate installation and maintenance.

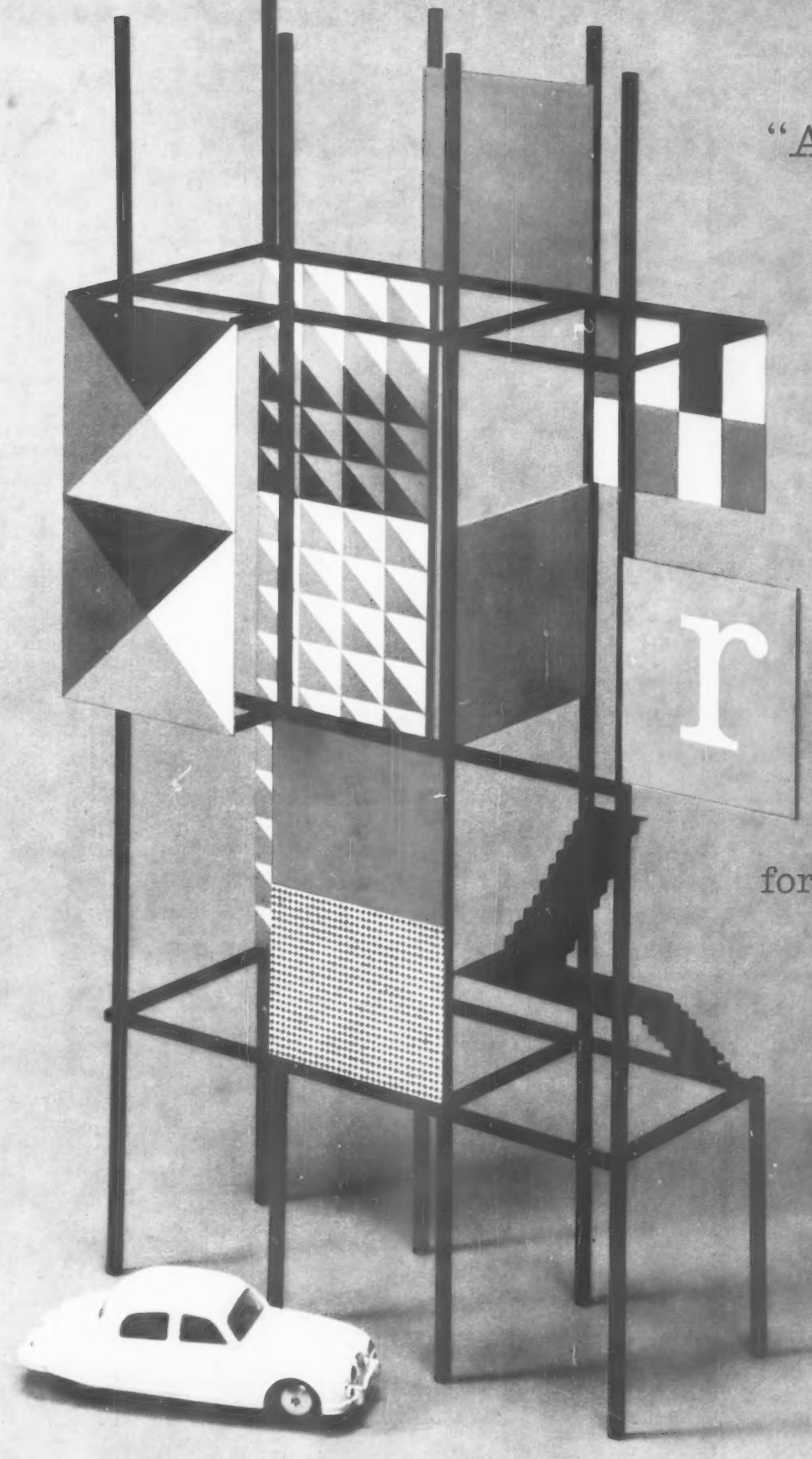
Fittings—the Atlanta is supplied with or without hand grip. The feet can be adjusted to accommodate all types of trap, including the Bilston "Wasteflo" prefabricated waste trap and overflow unit.
Also available with the Bilston O.P. Hand Grip specially designed to meet the needs of the elderly or infirm.

Colours—the Bilston range includes white, or the exact colour required for any decorative scheme.

BILSTON—the bath *SPECIALISTS*

WE HAVE AN EXHIBIT AT THE BUILDING CENTRE 26 STORE STREET WC1

Bilston Foundries Ltd Bilston · Staffordshire · Illustrated literature is available on request



"Armourclad" Glass Cladding

for versatility and richness in pattern and texture

Custom-made 'ARMOURCLAD' glass panels give new freedom to the architect and designer.
For further information on the use of glass in cladding and curtain walls consult Pilkington Brothers Ltd., manufacturers of 'ARMOURCLAD' and 'MUROGLASS'.

Pilkington Brothers Limited

'ARMOURCLAD' AND 'MUROGLASS' ARE GUARANTEED FOR 5 YEARS

ST. HELENS, LANCS. (TEL: ST. HELENS 4001) OR SELWYN HOUSE, CLEVELAND ROW, ST. JAMES'S, LONDON, S.W.1 (TEL: WHITEHALL 5672-6)
SUPPLIES ARE AVAILABLE THROUGH THE USUAL TRADE CHANNELS. 'ARMOURCLAD' IS A REGISTERED TRADE MARK OF PILKINGTON BROTHERS LTD.

Have YOU read about the New Heywood-Helliwell Continental Aluminium Windows... the most modern development in Metal Window Technique?

★ The main characteristics are the perfection of detail, the very high standard of finish, and the ease and efficiency of operation.

★ Competent weather sealing, material protection, choice of single or double glazing, inward or outward opening, and inner or outer glazing, meets the most rigid demands of a modern lightweight metal window.

★ Hospitals, schools, flats, offices and the modern factory offer a perfect setting for these high quality windows, which form a very definite Architectural feature in structures of this type.

★ Write for Bulletin No. 1 which fully describes series A, B and C of this new Aluminium Window. The variation of this basic series offers a practical choice of application with a realistic regard to cost.

The Continental style Aluminium Window

By HEYWOOD HELLIWELL

HEYWOOD - HELLIWELL LIMITED **BAYHALL WORKS . HUDDERSFIELD** ***Tel 6594 (5 lines)***

This craftsman is protecting YOU against the hazards of fire

by USING

"Murilite"
REGD. TRADE MARK
PRE-MIXED PERLITE PLASTER

"Murilite" Pre-mixed Perlite Plaster is a combination of the well-known "Murite" Gypsum Plaster with Expanded Perlite, an aggregate of extreme lightness. This aggregate is incorporated in the factory, thus ensuring that proportions and mixing are always correct. The use of Perlite as the aggregate provides many advantages, such as extreme lightness, remarkable workability and improved thermal insulation and fire resisting properties.

Gypsum Plaster is one of the finest fire resisting materials known to the Building Industry, but when Perlite is incorporated as in "Murilite" Pre-mixed Perlite Plaster, its fire resistance is greatly increased. This outstanding quality of fire resistance is amply borne out by the high fire ratings awarded by the Fire Research Station, as a result of tests carried out on various types of structure.

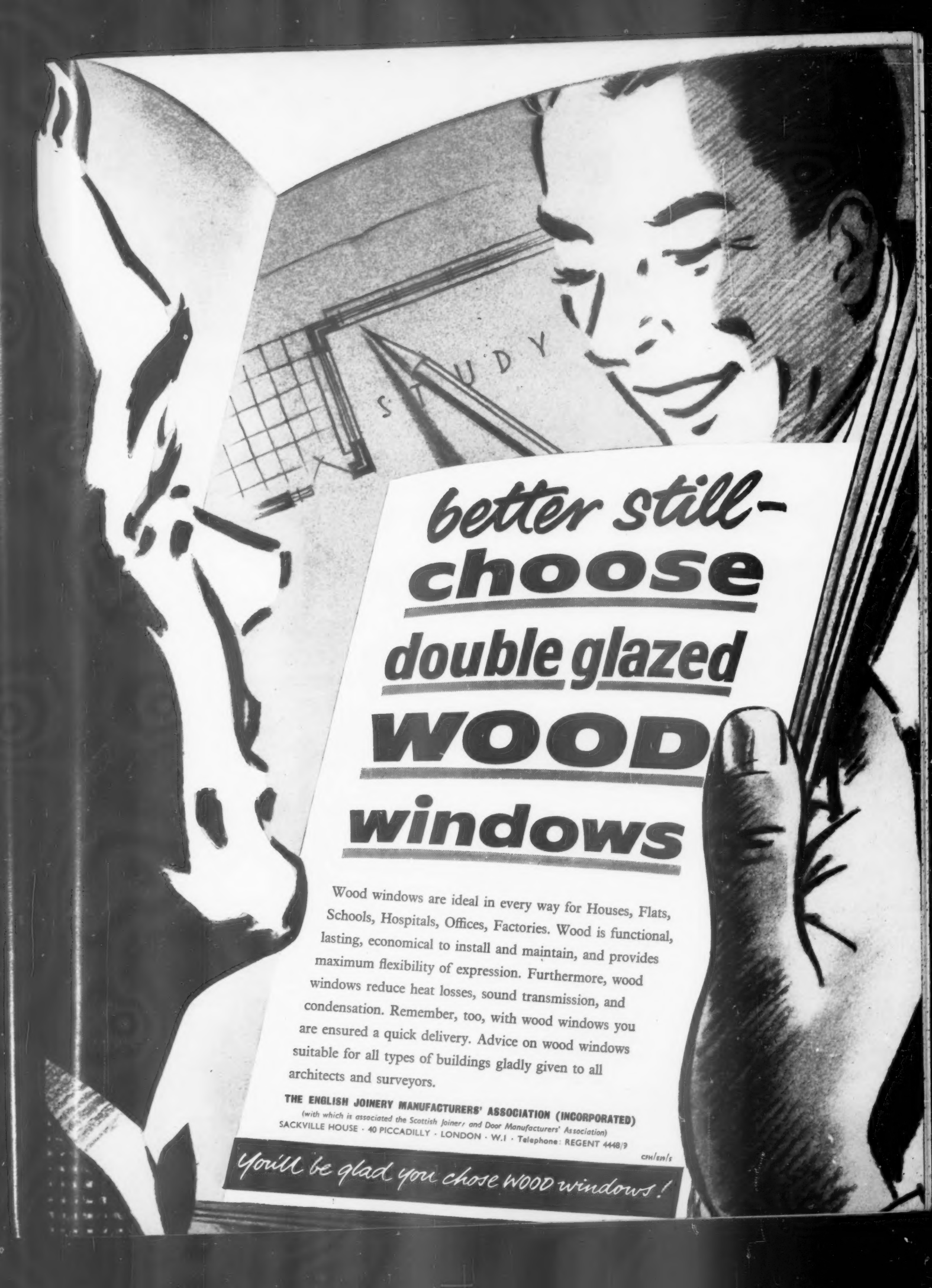
Write to the address shown below for complete details of these fire rating tests made in accordance with British Standard Definitions No. 476:1953

CAFFERATA & CO. LTD.

NEWARK • NOTTS.

TELEPHONE NEWARK 2060 TELEGRAMS "CAFFERATA" NEWARK

Imagination becomes fertile
only when it finds the ideal outlet.
Yet the right means of expression
may itself be a powerful stimulus.
For the architect and designer,
the WARERITE idiom both expresses
and stimulates. It offers a wealth
of material to match the mood of
his creative effort.
Rich harmonies or the occasional
condiments of discord, broad patterns
to impose exciting rhythms on space,
or neat patterns of colour to create
tactile impressions all these
the designer can draw upon.
Subdued or positive, cool or exotic,
WARERITE laminated plastics have
that intangible but unmistakable
quality of Design Leadership.
Consult your local WARERITE Specialist
(Patterns shown reduced size)
Look to WARERITE for Design Leadership
A product of BAKELITE LIMITED
REGD
12-18 Grosvenor Gardens London SW1 SLOane 0898



better still- choose double glazed WOOD windows

Wood windows are ideal in every way for Houses, Flats, Schools, Hospitals, Offices, Factories. Wood is functional, lasting, economical to install and maintain, and provides maximum flexibility of expression. Furthermore, wood windows reduce heat losses, sound transmission, and condensation. Remember, too, with wood windows you are ensured a quick delivery. Advice on wood windows suitable for all types of buildings gladly given to all architects and surveyors.

THE ENGLISH JOINERY MANUFACTURERS' ASSOCIATION (INCORPORATED)

(with which is associated the Scottish Joiners and Door Manufacturers' Association)

SACKVILLE HOUSE · 40 PICCADILLY · LONDON · W.1 · Telephone: REGENT 4448/9

CTH/EJM/5

You'll be glad you chose WOOD windows!

Efficient and economical piling

DELTA is *new* to this country, but has been employed with outstanding success for many years on the Continent of Europe.

DELTA is a driven cast *in-situ* pile which is at once economical, and completely effective.

DELTA is particularly suitable for the spreading of loads on comparatively thin layers of hard strata—which would be inadequate to support the conventional pointed pile.

DELTA entirely eliminates 'necking' of the pile stem, and special pressure-formed 'bulbs' guarantee an exceptionally high load-bearing capacity.

DELTA ensures that concrete is completely protected from water during placement.

DELTA requires light-weight gear, permitting pile driving on indifferent ground surfaces.

Place your construction programme on an incomparably sound basis by specifying DELTA piles.

H.D. FOUNDATIONS LTD

OFFERS SPECIALISED FOUNDATION SERVICES

HOLLOWAYS

One of the Holloway Group of Companies

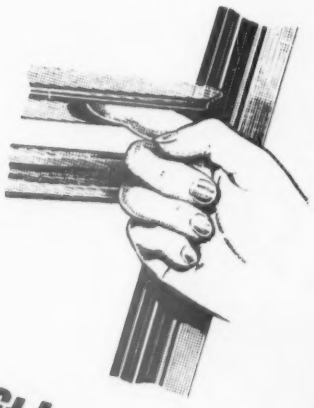
Sole Licencees for DELTA PILES

for United Kingdom, Eire, and British Commonwealth

H. D. FOUNDATIONS LTD, 40 HARLEYFORD ROAD, LONDON SE11

TELEPHONE RELIANCE 6604

it costs no more to have 'assisted lift'



Although the 'WARWICK' has 'assisted lift' and other exclusive features, it remains the lowest priced aluminium window available today—in a wide range of standard sizes or purpose made to any size.

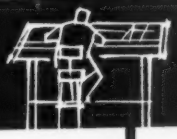
exclusive to:

WARWICK
ALUMINIUM SASH WINDOWS

Further information immediately available from :-

ALUMIN BUILDING COMPONENTS LIMITED
Weston-Super-Mare Somerset Tel : W-S-M 5641 (5 lines)

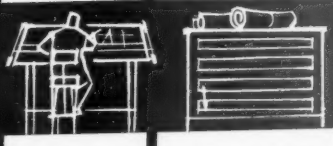
VINCULUM



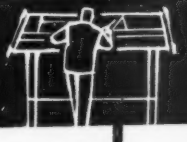
A complete service

VINCULUM

...to the Architect



VINCULUM



and the Builder

VINCULUM

PRE-CAST CONCRETE

...for every purpose

TG **TARMAC VINCULUM LIMITED**

ETTINGSHALL · WOLVERHAMPTON *Telephone BILSTON 41101 (12 Lines)*

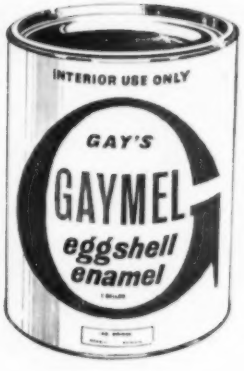
Tear strength is one of the virtues of

FIBREGLASS CROWN

FIBREGLASS CROWN is the new thermal and sound insulation material. It is one of the lightest materials that even Fibreglass have ever made—which is really saying something. That makes it all the more easy to handle. It is highly resilient and can be compression-packed. That makes it much easier to store. Yet, for all its extreme lightness, Fibreglass Crown is very tough. Its tear strength is excellent and its insulation effectiveness is the greatest ever.

There are other advantages to Fibreglass Crown—a whole list of them. At the drop of a hint, we will tell you all about them. We will also detail the applications for which Fibreglass Crown is available now and those for which it will be ready soon. If you are concerned in any way with better insulation, please ask us.

Fibreglass Limited, St. Helens, Lancs. St. Helens 4224



GAYMEL EGGSHELL ENAMEL

First came Gaymel Enamel, then the new Gaymel Flat Enamel and now GAY's introduce a further addition to their superb range of finishes – GAYMEL EGGSHELL ENAMEL.

This is an exceptionally high quality enamel for interior use. It gives a true 'eggshell' sheen with a toughness and durability that withstands frequent washing. Gaymel Eggshell Enamel has a semi-paste consistency and can be applied coat on coat – without a separate undercoat – by brush, roller or spray. It is available from stock in 36 intermixable colours selected from Gay's Architect's Range.

For really top class results, with less time and labour, specify GAYMEL EGGSHELL ENAMEL, another sound paint by Gay's.

Write for full information and shade cards to:—

R. GAY & CO. *93/97 New Cavendish Street, London, W1*

HENRIETTA HOUSE,
Henrietta Place, W.1
Architects:
J. S. Gibson, Gordon & Montagu, F.F.R.I.B.A.
Contractors:
Trollope & Colls Ltd.

Another Modern Building with
High Quality Sanitary Fittings by

BOLDINGS

JOHN BOLDING & SONS LTD
Grosvenor Works Davies Street London W 1
Telephone MAYfair 6617

RONDO vitreous china basin
incorporating DUFLO mixer spra ytap

AP63

Braby

PARTITIONS

The east supplies the basic idea, but it takes western ingenuity to make a practical job of partitioning for industrial use. Braby construct their Bar-Form metal partitions of extruded aluminium alloy sections, with double dado panels (insulated) for offices, factories, hospitals and other buildings — excluding traditional Japanese houses.

FREDERICK Braby & COMPANY LIMITED

LONDON: *352-364 Euston Road, London, N.W.1*
Telephone: EUSton 3456

GLASGOW *Eclipse Works, Petershill Road, Glasgow, N.*
Telephone: SPRingburn 5151

CRAYFORD • LIVERPOOL • BRISTOL • BELFAST • PLYMOUTH

AP151

RILEY service in your area

Make a note of your local Riley service centre now and get to know our representative or agent. He will give full advice on the type of equipment required and will install and keep your Riley equipment at optimum operational efficiency. Comprehensive contract maintenance can be arranged where required.

LONDON	RILEY (IC) PRODUCTS LTD, 19 Woburn Place, W.C.1 *Terminus 2622*
BELFAST	HENRY R. AYTON LTD, 7 Brunswick Street *Belfast 29834*
BIRMINGHAM	POWER UTILITIES LTD, Lombard House, Gt. Charles Street *Central 3446*
BRISTOL	RILEY (IC) PRODUCTS LTD, 75 Queens Road *Bristol 27934*
DERBY	RILEY (IC) PRODUCTS LTD, Derby *Derby 23223*
DUBLIN	HENRY R. AYTON LTD, 20 Harcourt Street *Dublin 51335*
GLASGOW	RILEY (IC) PRODUCTS LTD, 129 St. Vincent Street *Central 1164*
LEEDS	RILEY (IC) PRODUCTS LTD, National Employers' House, Quebec Street *Leeds 33274-5*
MANCHESTER	BAKER, KELLY & WALLIS, 123 Deansgate *Blackfriars 5122*
N. E. MIDLANDS	RILEY (IC) PRODUCTS LTD, 54 Thorpe End, Melton Mowbray, Leicestershire *Melton Mowbray 495*
NEWCASTLE-UPON-TYNE	RILEY (IC) PRODUCTS LTD, Emerson Chambers, Blackett Street *Newcastle 24871*

Representatives and service engineers are established at the various centres listed to give the best possible pre-sales, installation and maintenance service covering all the Company's equipment:

UNDERFEED & CHAIN GRATE STOKERS

OIL BURNERS & OIL FIRING INSTALLATIONS

OIL FIRED AIR HEATERS · KILN STOKERS · INCINERATORS

SYNTRON ELECTRIC VIBRATORY EQUIPMENT

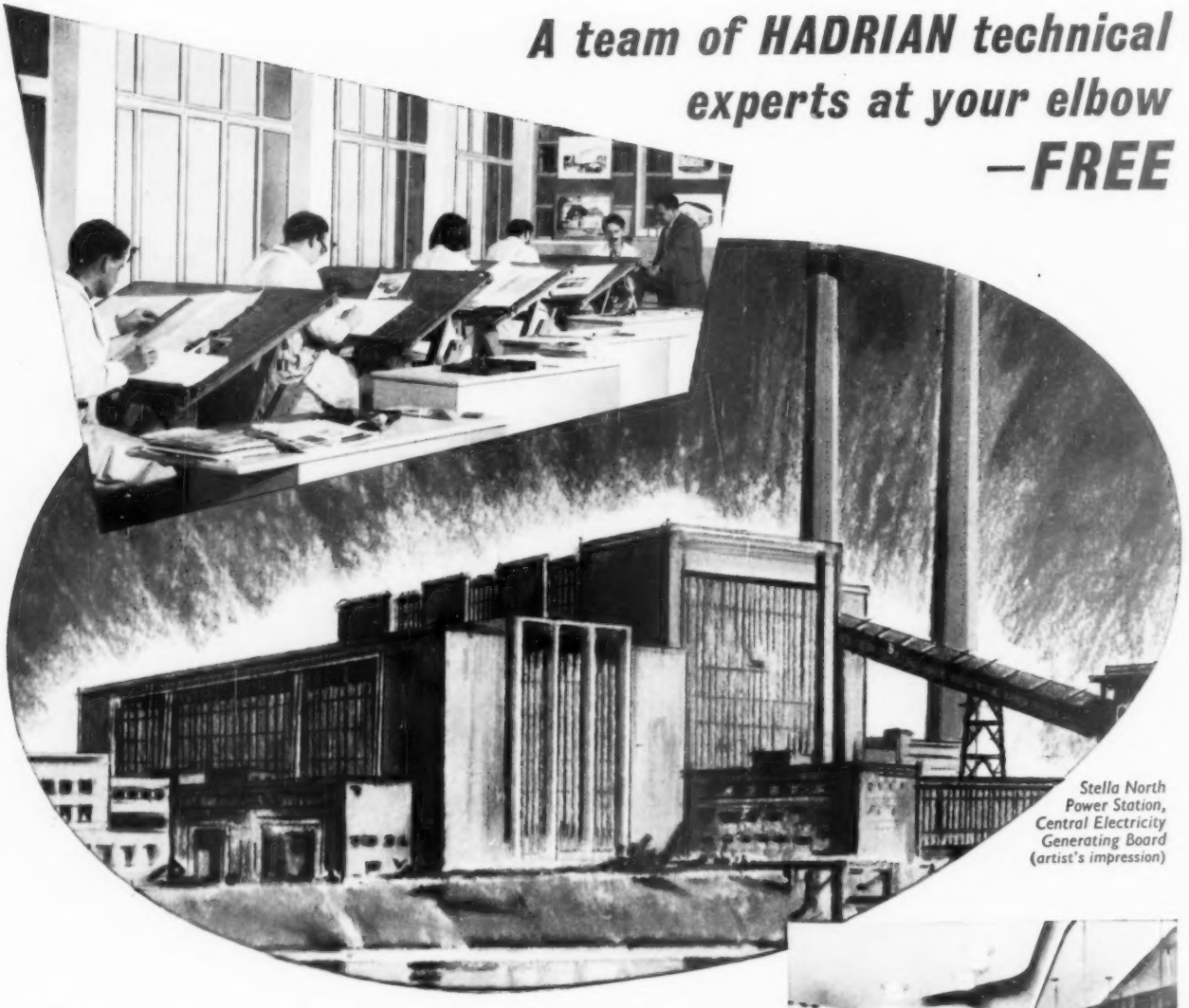
RILEY (IC) PRODUCTS LIMITED

One of the International Combustion Group of Companies

NINETEEN WOBURN PLACE LONDON WC1 · TELEPHONE: TERMINUS 2622

TGA R76

A team of HADRIAN technical experts at your elbow —FREE



Stella North Power Station, Central Electricity Generating Board (artist's impression)

Calypso Bar, Prince's Restaurant, Glasgow (photo: Bryan & Shear)

THE HADRIAN TECHNICAL ADVISORY SERVICE is constantly producing detailed paint specifications, colour schemes, and providing a complete technical service for housing schemes, mansions, schools, churches, cinemas, theatres, hotels and for some of the world's largest power stations and factories.

- ★ On-the-site advice
- ★ Technical information on colour psychology
- ★ Perspective Colour Schemes
- ★ Detailed paint specifications for every job
- ★ Advice on all your paint problems.

The Hadrian Technical Advisory Service is for you — please use it!

SMITH & WALTON LTD HALTWHISTLE. NORTHUMBERLAND

72

THE SIMMS SONS & COOKE LTD SERVICE

MANUFACTURING & BUILDING

Highfield County Primary School, Leeds · *Architect:* The late R. A. H. Livett, Esq., O.B.E., A.R.I.B.A., *City Architect, City of Leeds*

The **SIMMS C-DA System** of Permanent Timber Construction was specified by Leeds City Council for Highfield County Primary School and four others, namely

Clapgate County Primary School, *Cranmore Drive, Belle Isle Estate, Leeds* 10

Greenhill County Primary School, *Gamble Hill, Henconner Lane, Greenthorpe, Leeds* 13

Cookridge County Primary School, *Tinshill Drive, Leeds*

Moor Allerton County Primary School, *Lidgett Lane, Leeds* 17

Main Contractor:
W. J. Simms Sons & Cooke Ltd
Horsforth, Leeds

C-DA Superstructure manufactured and erected by
W. J. Simms Sons & Cooke Ltd
Nottingham

Simms Prefabrication backed by Simms Building Service means completion to time

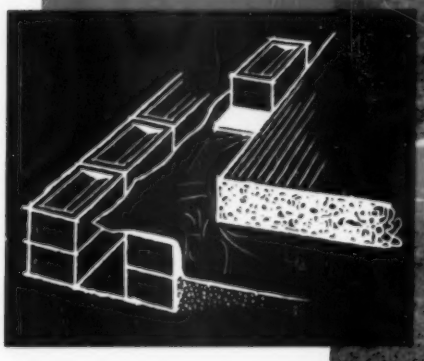
Further particulars available from

W. J. Simms Sons & Cooke Ltd *Building and Civil Engineering Contractors*

Head Office: Haydn Road, Sherwood, Nottingham · *Nottingham* 66264 (11 *lines*)

Sales Office: British Simms Buildings Ltd, 12 York Buildings, Adelphi, London, WC2 · *Trafalgar* 3383

Leading contractors defy damp with 'Visqueen' oversite membranes



'Visqueen' 500 heavyweight, laid under the concrete ground floor rafts of a Wimpey house at Acklam, Middlesbrough. This estate is part of their national speculative house building programme.

George Wimpey and Co. Ltd. insure against rising damp and sulphate attack on their housing estates. They specify polythene sheeting as a damp-proof membrane.

First they put down a smooth concrete or sand blinding on the hardcore. Then the sheeting is quickly and easily unrolled. No adhesives or heat sealing are needed for the joints; just a simple "double welt" fold. The sheeting is incorporated with the d.p.c. (see diagram).

'Visqueen' building sheet is *cheaper* than conventional oversite damp-proofing materials. It also provides an effective seal against liquids and is an efficient water vapour barrier.

'Visqueen' is flexible, tough and chemically inert. Its acid resistant qualities ensure *lasting* protection for floor coverings and adhesives.

For full details, an illustrated brochure and the name of your local 'Visqueen' distributor, write now to:

BRITISH VISQUEEN LIMITED

SIX HILLS WAY, STEVENAGE. *A subsidiary company of Imperial Chemical Industries Limited*

BV 140

Maximum legibility and good taste are combined in the Gents wall clocks shown here.

Styled by a leading industrial designer they provide a choice of standard models which fit happily into present-day surroundings and décor.

These and others in the extensive Gents range have been selected by the Council of Industrial Design for inclusion in Design Index.

All are available for operating either on A.C. Mains or as part of a Master Clock System.

In every way...Right!

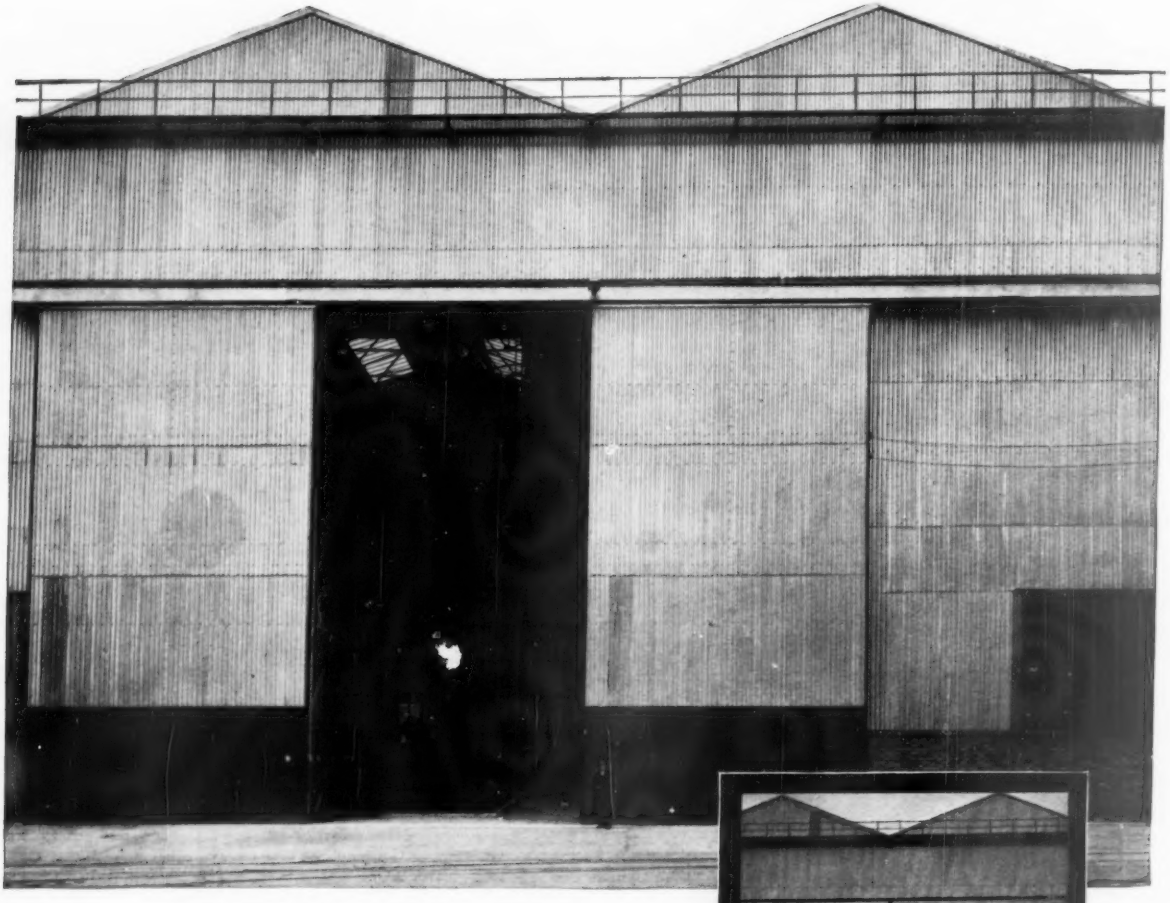
May we send you literature?

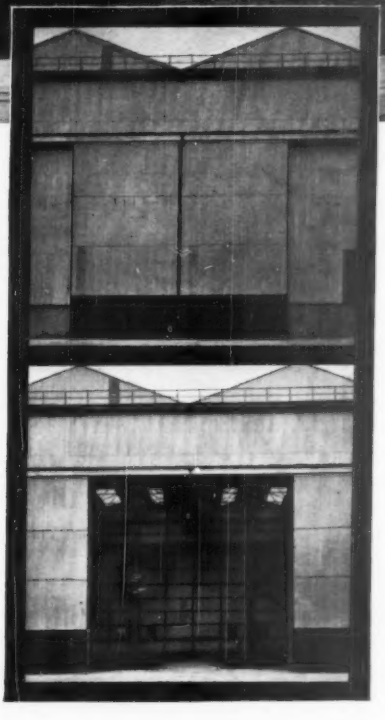
GENTS
OF LEICESTER

ELECTRIC CLOCKS

GENT & COMPANY LIMITED,
Faraday Works, Leicester. Telephone: 36151
London Office & Showroom:
47, Victoria Street, S.W.1. Telephone: ABBey 6888

Also at: BIRMINGHAM. BRISTOL. EDINBURGH. GLASGOW. NEWCASTLE. BELFAST





Another contract

for BOOTH STEEL DOORS

These large, electrically operated, steel doors were fabricated and fitted by BOOTH for Messrs. William Denny & Bros. Ltd. of Dumbarton. The opening is 47′ 3″ wide and 44′ 0″ high. Architects: Babtie, Shaw & Morton, Glasgow.

BOOTH have the facilities for fabricating and fitting all kinds of steel doors and rolling shutters — weatherproof and fireproof — for warehouses, factories, stores, transport depots, and any other buildings, which may have large or unusual openings.

BOOTH STEEL DOORS

. . . for those wide open spaces

JOHN BOOTH & SONS (BOLTON) LTD., HULTON STEELWORKS, BOLTON, LANCS.

Telephone: BOLTON 1195 LONDON: 26 VICTORIA STREET, WESTMINSTER, LONDON, S.W.1. *Telephone:* ABBey 7162

97% EFFICIENCY

in the 5 micron range

Particles under 5 microns cause the unsightly smudge around air supply diffusers, on ceilings and walls. More than 20 square feet of effective filtering area are contained in every 20″ × 20″ × 8″ FAR-AIR HP unit panel: this provides 97% efficiency of solids removal on the 5 micron (smudge) size of dust particles, with minimum pressure loss in ventilating systems. Designed for use as an after-filter in combination with FAR-AIR high-velocity viscous impingement air filters, the Type HP Filter is recommended for those applications that require an exceptionally high degree of air cleanliness, particularly where the need for frequent air changes involves the handling of large volumes of air at high velocities.

for HIGH *efficiency at* LOW *cost —*

interpose an **INTERMIT**

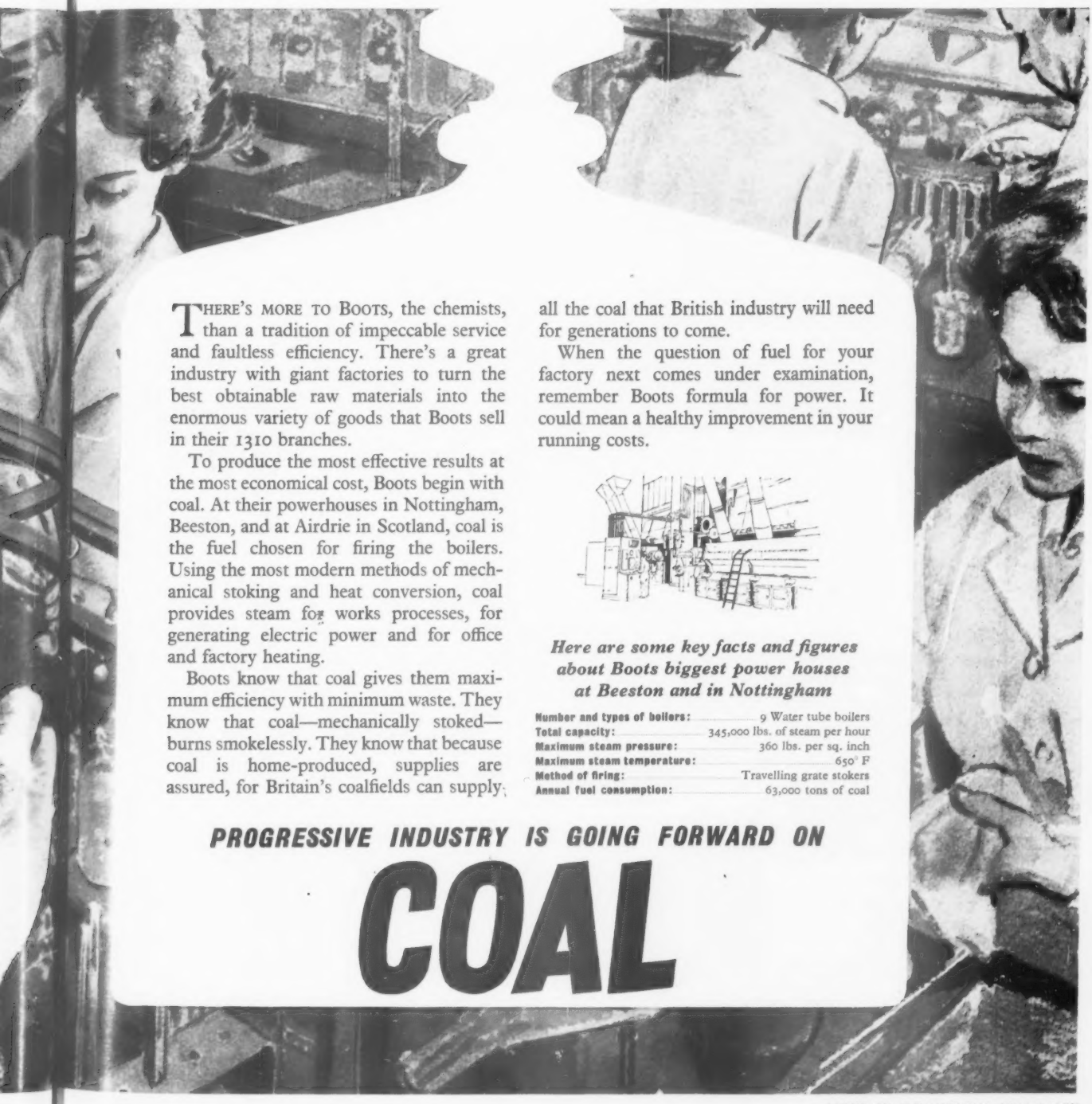
FAR-AIR Type HP High-Velocity AIR FILTER

INTERMIT LIMITED Bradford Street, Birmingham, 5. Telephone: Midland 7961/4

Member of the **Birfield Group**

Boots formula

for power—Coal



THERE'S MORE TO BOOTS, the chemists, than a tradition of impeccable service and faultless efficiency. There's a great industry with giant factories to turn the best obtainable raw materials into the enormous variety of goods that Boots sell in their 1310 branches.

To produce the most effective results at the most economical cost, Boots begin with coal. At their powerhouses in Nottingham, Beeston, and at Airdrie in Scotland, coal is the fuel chosen for firing the boilers. Using the most modern methods of mechanical stoking and heat conversion, coal provides steam for works processes, for generating electric power and for office and factory heating.

Boots know that coal gives them maximum efficiency with minimum waste. They know that coal—mechanically stoked—burns smokelessly. They know that because coal is home-produced, supplies are assured, for Britain's coalfields can supply all the coal that British industry will need for generations to come.

When the question of fuel for your factory next comes under examination, remember Boots formula for power. It could mean a healthy improvement in your running costs.

Here are some key facts and figures about Boots biggest power houses at Beeston and in Nottingham

Number and types of boilers:	9 Water tube boilers
Total capacity:	345,000 lbs. of steam per hour
Maximum steam pressure:	360 lbs. per sq. inch
Maximum steam temperature:	650° F
Method of firing:	Travelling grate stokers
Annual fuel consumption:	63,000 tons of coal

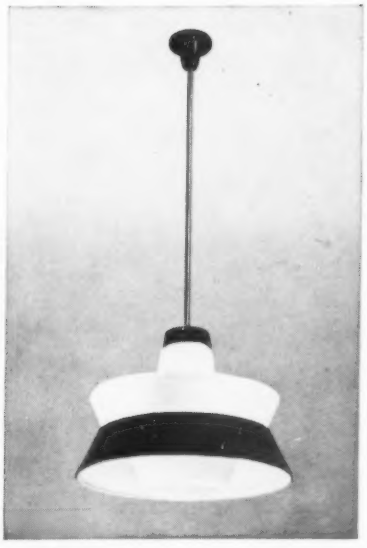
PROGRESSIVE INDUSTRY IS GOING FORWARD ON

COAL

ISSUED BY THE NATIONAL COAL BOARD

HERMES

SIRIUS

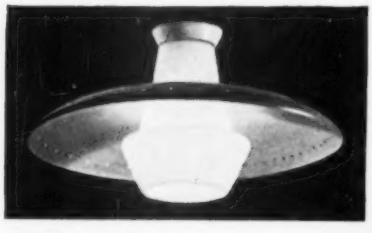


AJAX

The Fitting answer to your lighting needs

FALKS **MODERN FITTINGS**

The fittings shown here form part of a very comprehensive range designed to cover most commercial requirements. All of them can be seen at our West End or Branch Showrooms.



VEGA

SATURN

Designed by J. M. Barnicot M.S.I.A. of Falks

FALKS
FALK, STADELMANN & CO. LTD

Lighting Engineers and Manufacturers of Lighting Fittings

There is a FALKS Fitting for every purpose

91 FARRINGDON ROAD, LONDON E.C.1 Tel: HOLborn 7654. LONDON SHOWROOMS: 20/22 Mount Street, Park Lane, London W.1 Tel: MAYfair 5671/2
AP/110

A high density development for Leeds City Council

Architect:
The late R. A. H. Livett,
O.B.E., A.R.I.B.A.,
City Architect of Leeds.

Contractor:
F. Shepherd and Son Ltd., York.

FLATS—CROMWELL HEIGHTS,
LINCOLN GREEN ESTATE, LEEDS.

. . . . using 'Phorpres' Common and Facing Bricks

This multi-storey block of 50 flats at the Lincoln Green Estate, Leeds, is one of 11 similar blocks to be built on the 40 acre redevelopment area. 1,500 dwellings are scheduled to house 4,700 people. Other amenities—shops, garages, schools, clinic, club and public houses—are also planned.
In the completed construction 1,036,000 3" 'Phorpres' Dapple Lights, 148,000 'Phorpres' Commons and 9,000 'Phorpres' Slip Tiles will have been used.

LONDON BRICK COMPANY LIMITED—in the service of the Building Industry

BY APPOINTMENT
TO HER MAJESTY QUEEN ELIZABETH II
BRICK MAKERS

Head Office: Africa House, Kingsway, London, W.C.2. Tel: HOLborn 8282
Midland District Office: Prudential Buildings, St. Philip's Place, Birmingham, 3. Tel: Central 4141
South-Western District Office: 11 Orchard Street, Bristol 1. Tel: Bristol 23004/5
Northern District Office: St. Paul's House, 20-22 St. Paul's Street, Leeds. Tel: Leeds 20771

PHORPRES

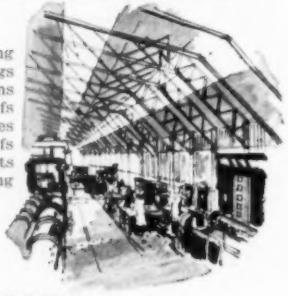
IN COMMERCE

Counter Fronts
Movable Screens
Window Displays
Partitions
Lighting Effects
Awnings
Shopping Canopies
Diffused Lighting

EVERYWHERE

IN INDUSTRY

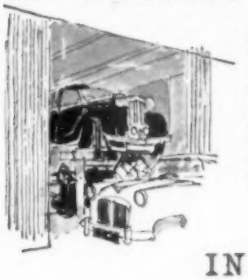
Glazing
Luminous Ceilings
Partitions
Warehouse roofs
Signs and Notices
Dock Roofs
Shower Compartments
Cladding



people are using

FILON

IN TRANSPORT



Gangways
Rolling Stock
Railway Station roofs
Airports
Washing Sheds
Bus Shelters
Awnings
Maintenance Sheds
Garage roofs and doors

*** strong * lightweight**

*** translucent**

Stronger than steel weight-for-weight, non-corrodible **FILON** has hundreds of applications wherever there is need for economical, safe, and sturdy structural sheeting, with the added advantage of light transmission. **FILON** polyester/glass fibre/nylon is shatterproof. Made by a continuous process, it is uniform in thickness, strength, and translucency. It is economical because of its strength, its long life without maintenance; because it is worked with ordinary tools, and lends itself to fast installation by conventional fixing methods.

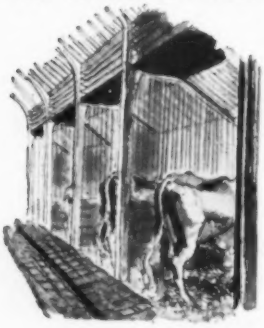
IN THE HOME AND GARDEN

Verandah Roofs
Skylights
Movable Screens
Greenhouses · Fences
Shower Compartments
Porches · Awnings
Wind Breaks
Garage Doors
Pool Enclosures
Sun Lounges · Canopies
Partitions
Garden Sheds · Glazing

FILON STRUCTURAL SHEETING

for light with lightness and strength with economy

ON THE FARM



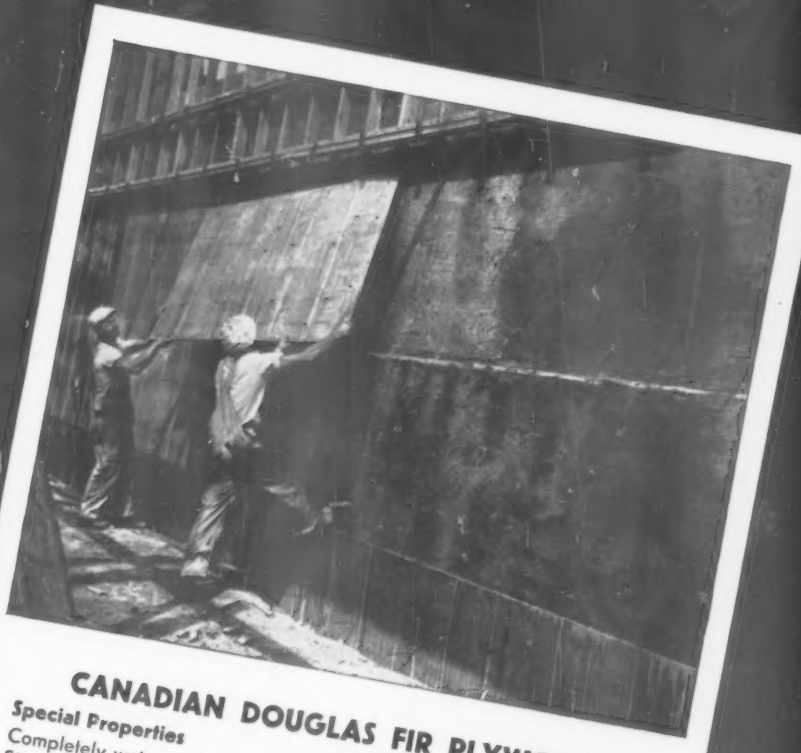
Barn Skylights
Storage Sheds
Greenhouses
Dairy Roofing
Poultry Equipment
Cow Byres
Cloches & Frames
Piggeries
Machinery Storage
Granaries & Driers
Stockhouse roofs

B.I.P. Reinforced Products Ltd · Streetly Works · Sutton Coldfield

Phone: Streetly 2411

CANADIAN TIMBER

...from Canada's vast forests a wood for almost every need!



CANADIAN DOUGLAS FIR PLYWOOD

Special Properties

Completely waterproof
Standard 8′ x 4′ panels
High strength-weight ratio
Specific structural design data
Graded to approved standards

Typical Uses

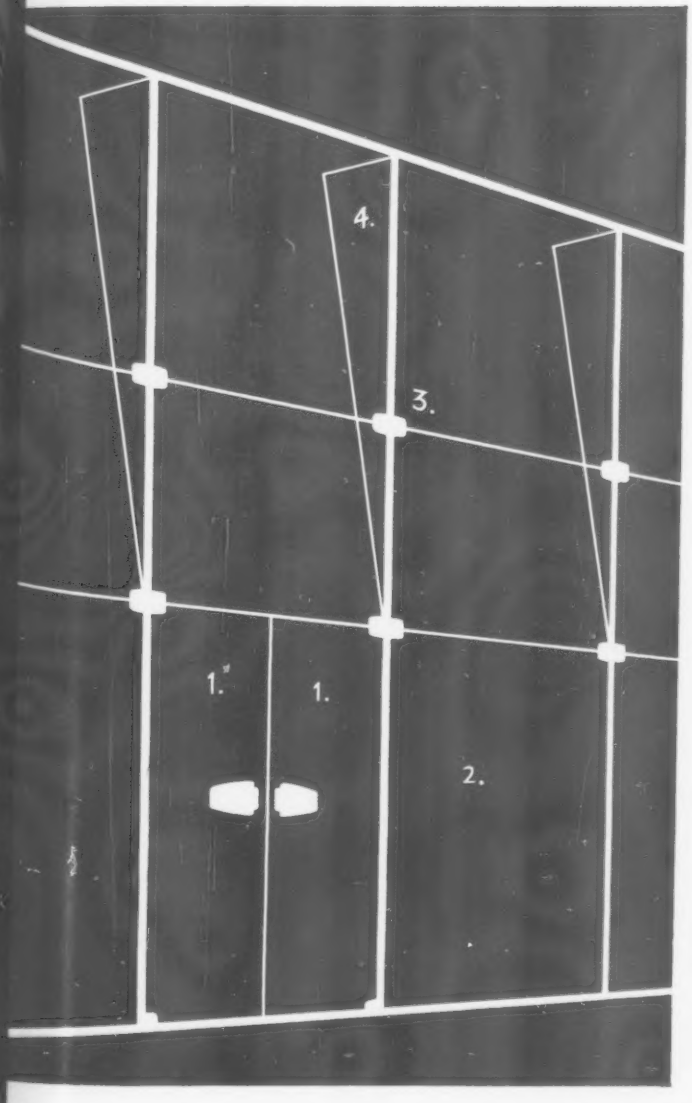
Concrete shuttering
Case making
Wall and roof sheathing
Flooring and Hoarding
Boat Construction
Pre-fab buildings
Web beam construction

For further information on Canadian Woods, contact:
Commercial Counsellor (Timber), Canada House, London, S.W.1.

This showroom front, based on an idea by Edward D. Mills, F.R.I.B.A., exemplifies the opportunities for erecting imposing all-glass assemblies using Pilkingtons' "ARMOURPLATE" Glass Doors and Panels.

Expansive Elegance

Pilkingtons' "ARMOURPLATE" Glass Doors and Assemblies



Now, the inviting elegance of "ARMOURPLATE" Glass Doors can be expanded to include the whole frontage. For full details of Pilkingtons' "ARMOURPLATE" Glass Assemblies and fittings—which make possible uninterrupted expanses of glass, two storeys high—write to the manufacturers, Pilkington Brothers Limited.

1 Pilkingtons' "ARMOURPLATE" Glass Doors (guaranteed five years) are available in standard sizes up to 96″ x 36″. Non-standard sizes made to order

2 "ARMOURPLATE" Glass fixed panels and transoms are available in sizes up to 164″ x 60″.

3 "ARMOURPLATE" Assemblies require no metal framing. Small patch fittings link and secure the separate panels.

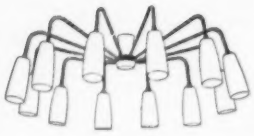
4 Rigidity is ensured by interior "ARMOURPLATE" Glass fins.

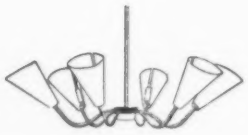
PILKINGTON BROTHERS LIMITED

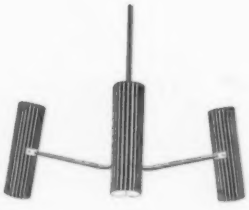
HEAD OFFICE: ST. HELENS, LANCASHIRE (TEL: ST. HELENS 4001)

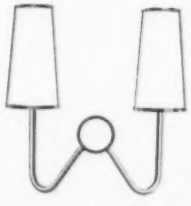
LONDON OFFICE: SELWYN HOUSE, CLEVELAND ROW, ST. JAMES'S, S.W.1 (TEL: WHITEHALL 5672-6)

"ARMOURPLATE" is a registered trade mark of Pilkington Brothers Limited. Supplies are available through the usual trade channels.









Beautifully made from durable materials, the "Variform" interchangeable parts provide literally thousands of elegant and sophisticated lighting fittings.

Whether it be a small three or large twelve light pendant or ceiling fitting, colourful or restrained, with wall brackets to match, your choice of design is almost unlimited with "Variform". Illustrations and further details will gladly be sent on request.

a new elegance in lighting

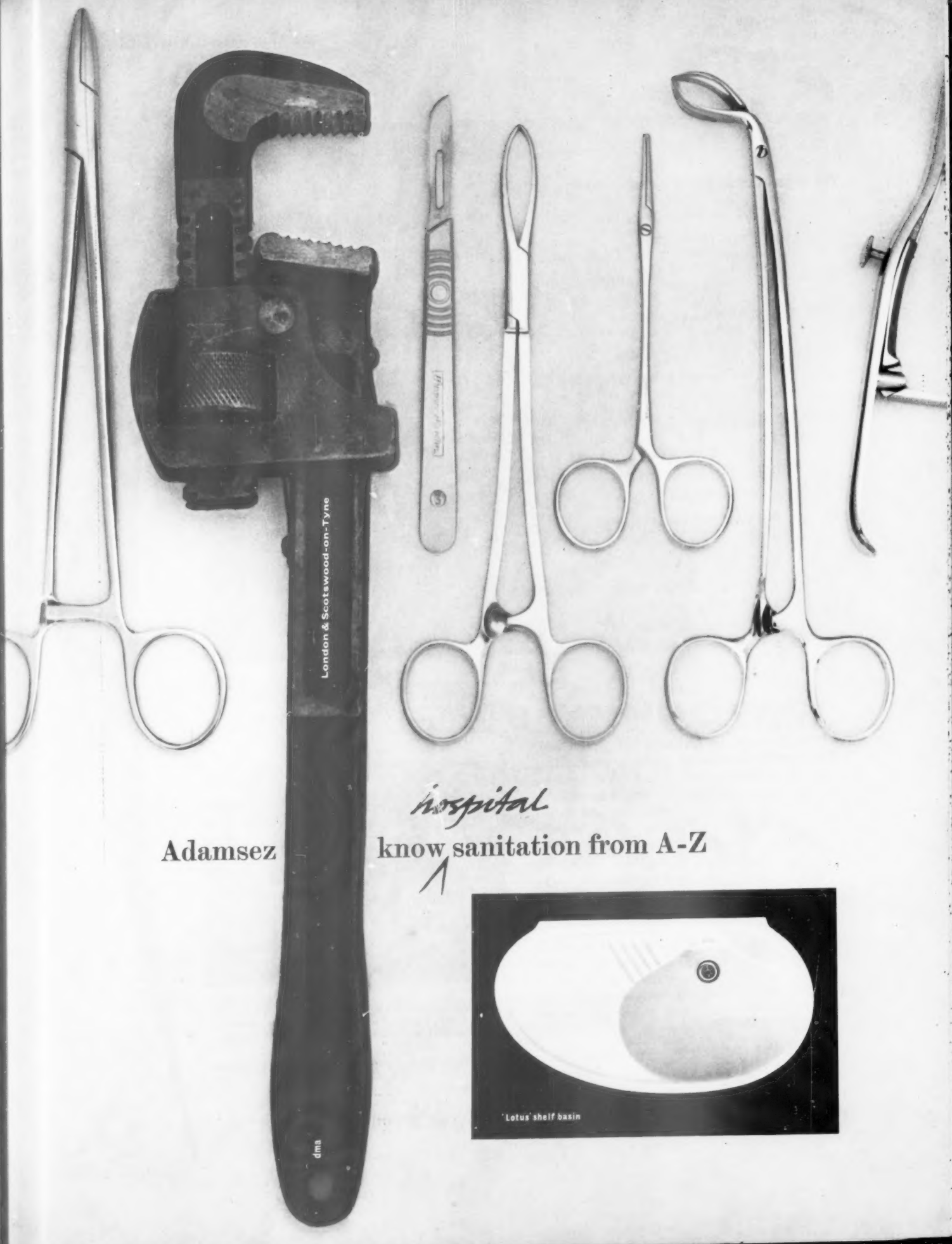
VARIFORM

interchangeable unit fittings

Photograph by courtesy of "The Queen"

G.E.C.
LIGHTING DIVISION

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, W.C.2



Adamsez ~~hospital~~ know sanitation from A-Z

To the architect and designer

ALCAN aluminium means:

- *Freedom to design outside the limitations of traditional raw materials*
- *One-piece hollow extruded sections made to intricately designed shapes never possible before*
- *Windows opening up new horizons in planning and design but right down-to-earth in sheer practicality*

To the building owner or occupier

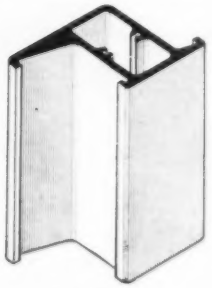
ALCAN aluminium means:

- *No painting necessary*
- *No rusting*
- *Resistance to decay and corrosion*
- *No warping*
- *No needless weight – windows that are* always *easy to open*
- *Reduced maintenance costs throughout the life of the building*

The advantages of aluminium are at their greatest with ALCAN aluminium. ALCAN, one of the world's largest producers, are specialists in the ingot field. To manufacturers, ALCAN specialisation means a constant, reliable source of aluminium in alloy forms exactly – *consistently* – suited to precise needs.

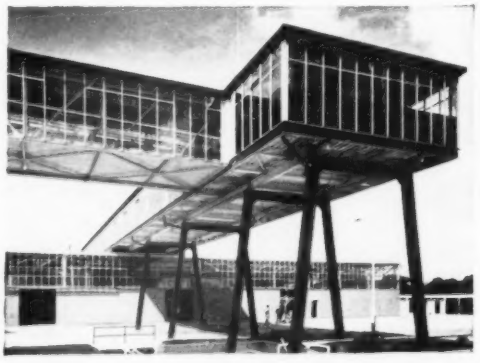
To architects and designers ALCAN specialisation makes available a vast store of technical knowledge and experience ready to be applied to any project, backed up by years of fabricating technique.

To the user of every aluminium product ALCAN specialisation means a certainty of quality and the best value that money can buy.



A typical example of an extrusion for aluminium windows.

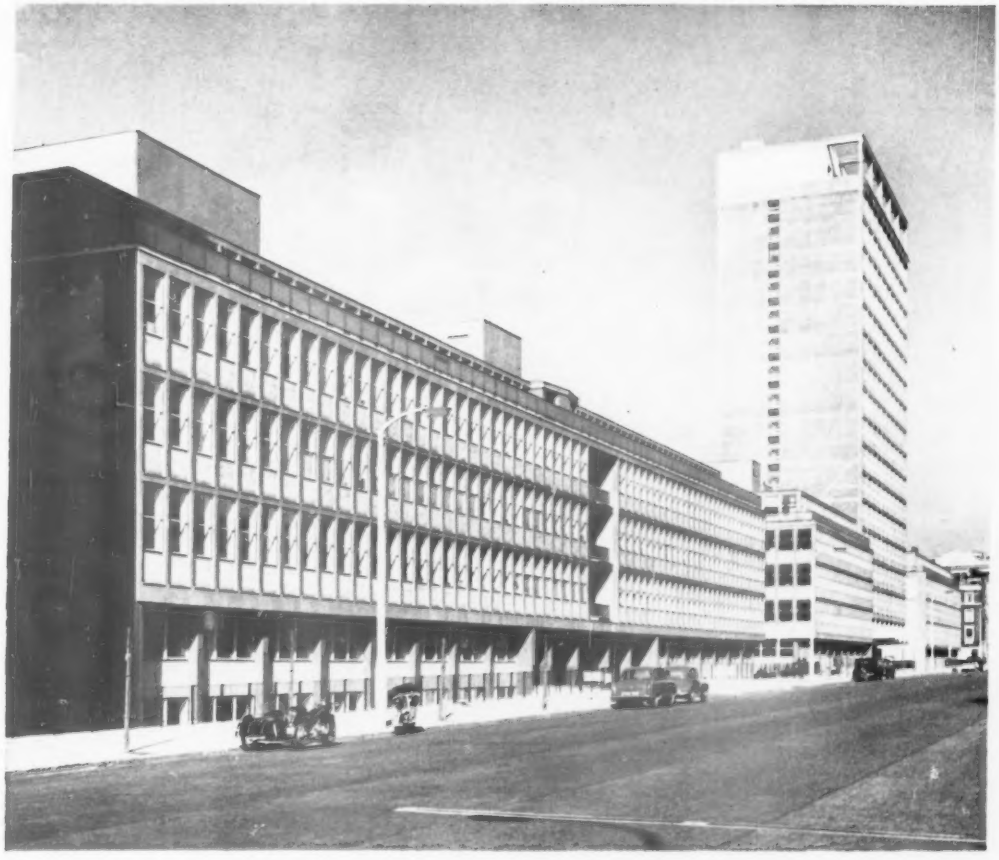
THE WILLIAMS & WILLIAMS LTD. *windows in the new head office of George Wimpey incorporate a special square tubular aluminium section housing strips of P.V.C. to reduce outside noise.*
Architect: E. V. Collins, A.R.I.B.A.



The can-making building of the new Wigan factory of H. J. Heinz & Co. Ltd. "Aluminex" Patent Glazing constructed of aluminium by WILLIAMS & WILLIAMS LTD. *was used.*
Architects: J. Douglass Mathews and Partners in association with Skidmore, Owings & Merrill.

This bungalow at Tunbridge Wells incorporates WILLIAMS & WILLIAMS LTD. *new 'Alomega' aluminium windows which utilise a patent mechanism in place of cords.*

ALCAN (U.K.) LIMITED · Aluminium Canada House · 30 Berkeley Square · London W1



TOMORROW'S **WINDOWS**

–already taking shape with

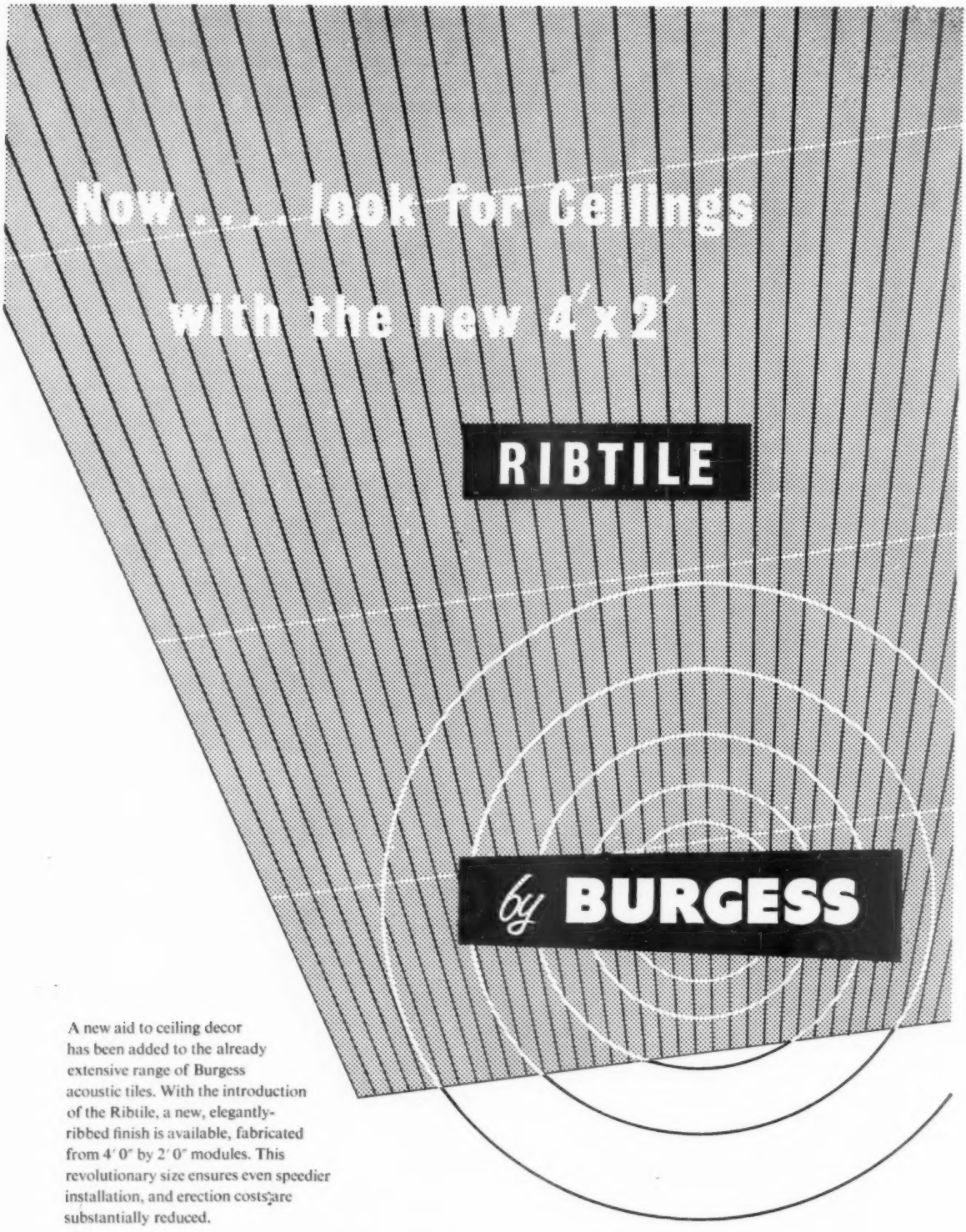
ALCAN

ALUMINIUM

The windows of today and tomorrow made of ALCAN aluminium will be better than ever before. In their natural clean finish, or colourfully anodised, they will present no problems of rust or decay, and lessen the cost of maintenance.

ABOVE *Eastbourne Terrace, Paddington uses no less than 2,698 aluminium double-hung windows by* WILLIAMS & WILLIAMS LTD. *Architects: C. H. Elsom and Partners.*

ALCAN
ALUMINIUM LIMITED OF CANADA



A new aid to ceiling decor has been added to the already extensive range of Burgess acoustic tiles. With the introduction of the Ribtile, a new, elegantly-ribbed finish is available, fabricated from 4′ 0″ by 2′ 0″ modules. This revolutionary size ensures even speedier installation, and erection costs are substantially reduced.

BURGESS PRODUCTS COMPANY LTD.
ACOUSTICAL DIVISION, HINCKLEY, LEICESTERSHIRE.

Fungi-Chek

★ by the DENTOLITE PROCESS

PERMANENT, NON-POISONOUS—HARMLESS, FUNGICIDAL AND BACTERICIDAL PAINTS

AN ANNOUNCEMENT OF VITAL IMPORTANCE TO EVERY READER OF "Architectural Review"

Now you can fulfil two objectives when decorating. Readers of this publication are probably familiar with the problems of fungi and mould growth on walls, ceilings and other painted surfaces. We know that in some trades it has become the accepted practice to decorate continually and clean in an attempt to control this serious menace.

PROOF! Photograph of a ceiling partly painted with Fungi-Chek. Test shows heavy mould growth, but the Fungi-Chek is completely free of growth.

Fungi-Chek (Gloss, Matt & Emulsion) Paints serve two purposes:

(1) they provide a decorative finish par excellence, with first class durability and resistance to steam, abrasion, acids and alkalis, etc.

(2) they are made continuously fungicidal and bactericidal, throughout the entire life of the paint film, by the Dentolite Process, and inhibit the growth of Mould, Fungi, Wild Yeasts and Bacteria — pathogenic or otherwise. (Tests after 5 years show the materials to be still thoroughly effective).
Fungi-Chek is entirely free from any toxic compounds of lead, arsenic, copper, mercury, tin or any harmful or poisonous chemicals, i.e. Fungi-Chek is non-poisonous and harmless.

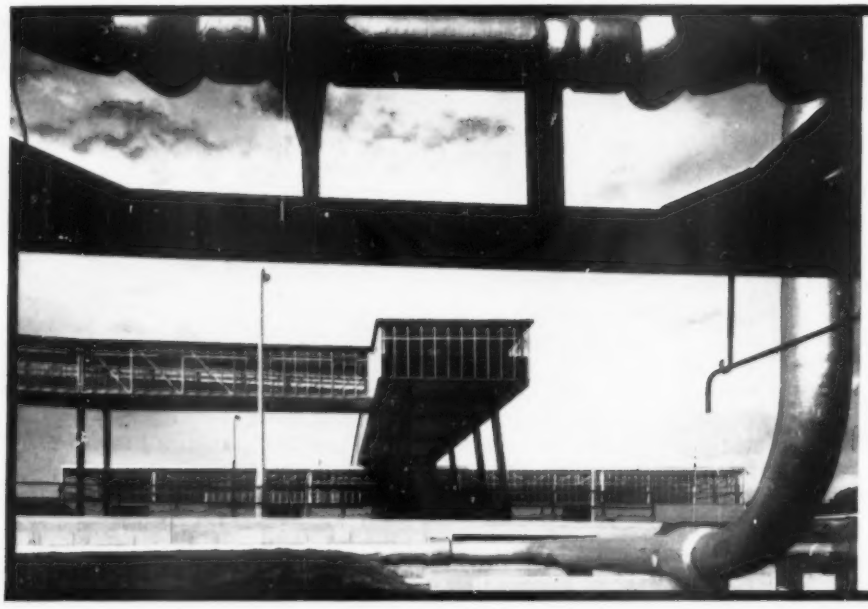
A Technical Advisory Panel is at your service and Scientific Literature and Samples are available on request.

DENTON'S PAINTS

SINCE 1789

DENTON EDWARDS PAINTS LTD.,
ABBEY ROAD, BARKING, ESSEX
RIPpleway 3871 (10 lines)

patent glazing is like windows only BIGGER and often it's IN THE ROOF and it doesn't Have PUTTY



The new Heinz factory at Wigan is the largest factory to be built in Britain since the war. Shown here is the ancillary can factory, clad in Williams & Williams "Aluminex" vertical patent glazing. The continuous opening lights are gear-operated to give critical control of ventilation.

Architects:
J. Douglass Mathews and Partners, London in association with Skidmore, Owings and Merrill, New York.

The new Heinz factory is turning depressed Wigan into a boom area. By the time it is in full production it will be employing some 3,000 local people and taking up a good deal of the local agricultural produce, which is both abundant and high in quality.

The 127-acre site has a gradient of 1 in 40 which has been exploited to give the factory two working levels—both accessible to lorries.

Manufacture starts on the upper level with unloading, storage, preparation and cooking. Products are then gravity fed to the lower level for can filling, sterilization, packing, warehousing and finally dispatch.

The presence of old coal mines underneath the site meant careful positioning of the component buildings. The can factory is therefore at some distance from the food production unit

WILLIAMS & WILLIAMS ALUMINEX SIDEWALL GLAZING HAS BEEN USED TO CLAD

the service gantry which takes finished cans across to the main factory for filling

and the covered footway connecting the two factories.

and is linked to it by a service gantry which feeds the finished cans into the appropriate stage of production process.

forward looking building products WILLIAMS & WILLIAMS

Williams & Williams make steel windows of every description, ALOMEGA and other aluminium windows, movable steel and glass partitioning, ALUMINEX patent glazing, WALLSPAN curtain walling and many other products, all of which can be seen at our permanent window exhibition at No. 36, High Holborn, London, W.C.1.
WILLIAMS & WILLIAMS, RELIANCE WORKS, CHESTER · WILLIAMS HOUSE, 37-39 HIGH HOLBORN, LONDON, W.C.1

When it's a question of VENEERS call in GLIKSTEN

There is a choice of fine DECORATIVE VENEERS at STRATFORD, ranging through the alphabet from Avodire to Zebrano. Among them it will be surprising if you don't find the exact veneer the job demands. Right in quality, quantity and cut. If you would like to come along and inspect our stocks, we should be happy to show you round: Ring or write to the Gliksten Veneer Division.

J. GLIKSTEN & SON LTD

Carpenters Road, London, E.15 *Tel.: AMHerst 3300*
Liverpool Office: 87 Lord Street *Tel.: Central 7576*
Hull Office: Victoria Dock, Citadel Street *Tel. Hull 31144*

THE FOREMOST NAME IN TIMBER

THE NORTH THAMES GAS BOARD

choose Ceramic Tiles

. . . as the perfect Wall surface for their Pumping Station at Bromley-by-Bow.
. . . Ceramic Tiles are the obvious choice for modern surfacing.

Contractors: J. & R. Rooff Ltd.
Tiling by: Wiggins-Sankey Ltd.

Visit the Association's display of ceramic tiles at the Building Centre, Store St., Tottenham Court Rd., W.C.1.

British Ceramic TILES

Glazed & Floor Tile Manufacturers' Association · Federation House · Stoke-on-Trent

Architects: Euston & Robertson

Engineering Services Contractors: G. N. Haden & Sons Ltd.

Approximately 1,000,000 square feet of

Approximately 1,000,000 square feet of

FRENGER

HEATED AND ACOUSTIC CEILINGS

in

SHELL CENTRE

on the South Bank of the Thames, London

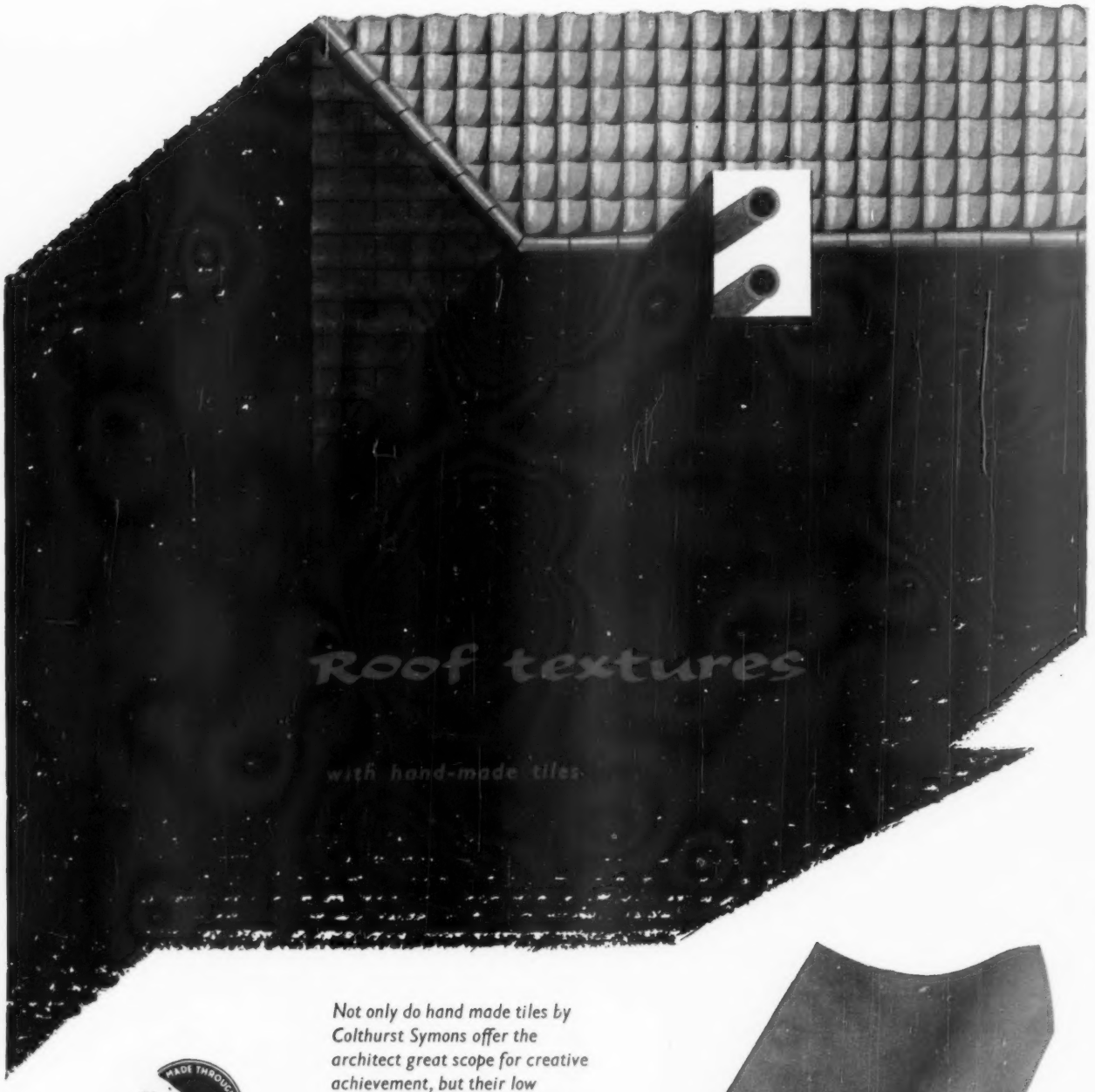
★

INTERESTING DETAILS ABOUT THE FRENGER INSTALLATION

- Frenger Ceilings will provide radiant heat, sound absorption, and summertime cooling to the major portion of this project.
- Heating achieved by circulating hot water through the sinuous ceiling tubes. Tubes also support the perforated aluminium panels which radiate the heat to the areas below.
- No loss of heat upwards.
- Thermostats fitted in each office to give flexibility of control.
- 18″ x 18″ and 18″ x 9″ panels form an attractive ceiling pattern.
- Sound absorption by combined thermal and sound insulating material behind the ceiling panels.
- Chilled water pumped through the tubes in summer will enable the volume of conditioned air to be reduced by 50%. This method also effects economies in ducting, etc.
- The ceilings provide facilities for quick and easy erection of partitioning. Frenger maintains privacy between offices to partition standard.
- Fully recessed lighting fixtures and ventilation diffusers will be fitted.
- Access to services in the ceiling void by Frenger Access Panels.
- Interesting innovation: Frenger to be installed in the kitchen because of its demountability and cleanliness. For this application the panels are not perforated.

The services of the Frenger Technical Sales Department are available for full information on Frenger Ceilings. Please write or phone the Sales Manager.

FRENGER CEILINGS LTD., 7-12 TAVISTOCK SQUARE, LONDON, W.C.1. EUSTON 6084
12 HARTER STREET, MANCHESTER 1. CENTRAL 4612 65 BALFOUR AVENUE, BELFAST. BELFAST 28768



Not only do hand made tiles by Colthurst Symons offer the architect great scope for creative achievement, but their low maintenance cost will pay tribute to his practical sense of values
PANTILES No. 6: The natural rough texture gives an individual character
Size 13⅞" x 9¾", 1,000 tiles cover 70 square yards (approx)

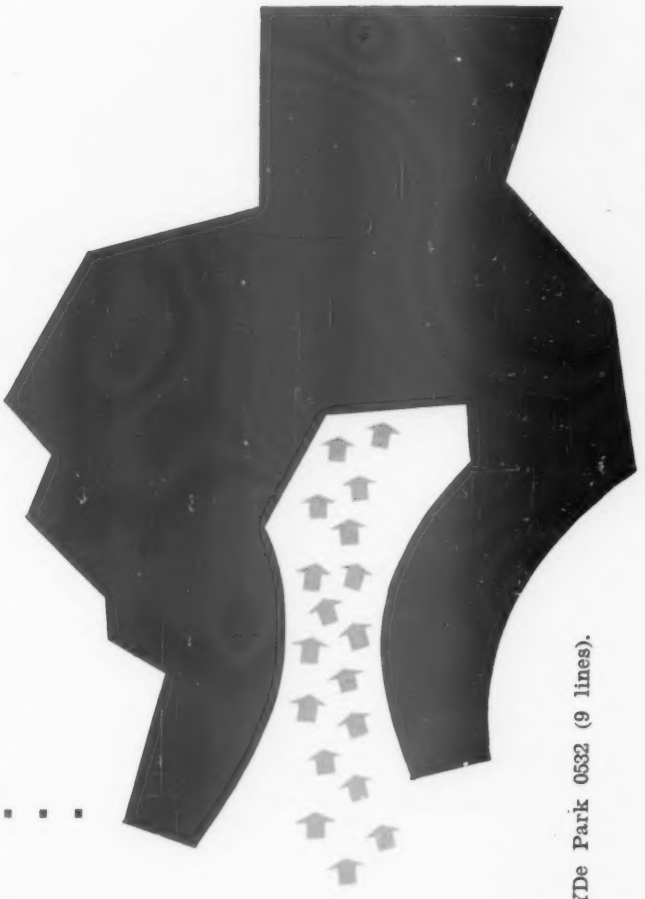
COLTHURST SYMONS & CO LTD BRIDGWATER SOMERSET

hille
CONTRACT DIVISION

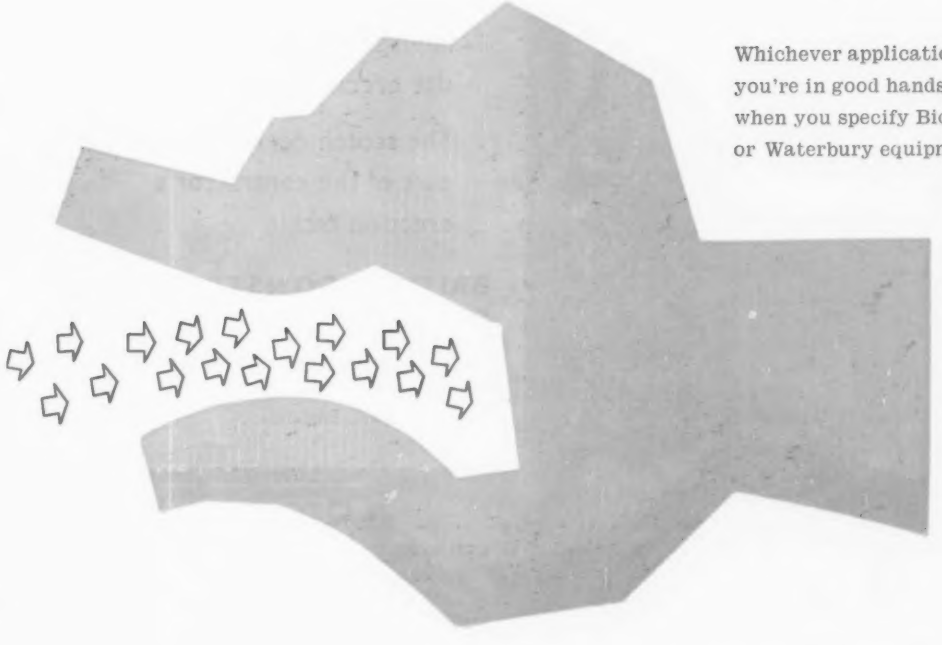
HANDSOME IS, HANDSOME DOES—with his new Status Group, Robin Day introduces a truly protean modernity. At remarkably low prices, considering the materials and workmanship employed. Several basic broad desk tops, pedestals, panels, tables and storage cabinets; practically infinite permutations, to match any space and function — for example L-shaped arrangements, for compact convenience. Mahogany, pacific walnut, teak or rosewood veneers, working tops timbered or grey melamine, hardwood lipped. Square-section steel frames and legs, matt black or satin chrome. Many harmonious Hille chairs. Visit our showrooms, 39/40 Albemarle Street, London, W.1, Hyde Park 9576, or 24 Albert Street, Birmingham 4, Midland 7378, or write for brochure.

Internationally-honoured furniture for homes and offices

GRAMPIAN · A COTTON AND WOOL PLAID
EW
EDINBURGH WEAVERS · 102 MOUNT ST · LONDON W1



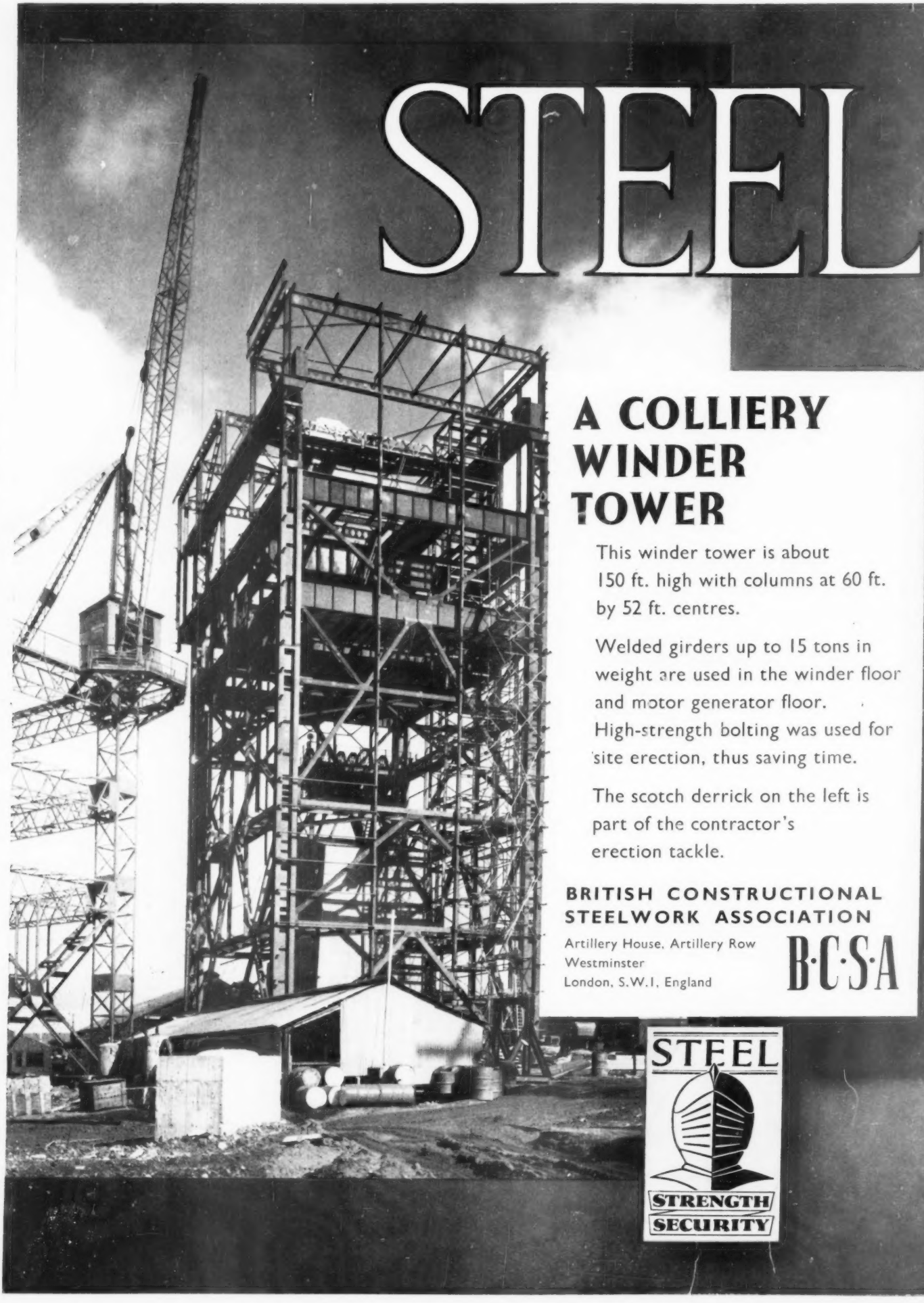
Convection
or Warm Air . . .



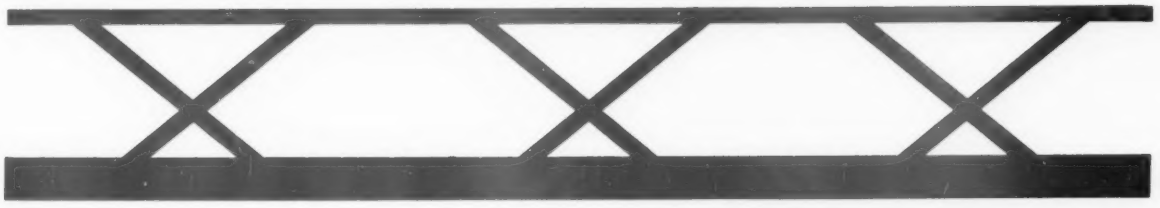
Whichever application,
you're in good hands
when you specify Biddle
or Waterbury equipment.

16, Upper Grosvenor Street, London, W.1. Telephone: HYDe Park 0532 (9 lines).

F. H. BIDDLE LIMITED | WATERBURY LIMITED


STEEL
A COLLIERY WINDER TOWER
This winder tower is about 150 ft. high with columns at 60 ft. by 52 ft. centres.
Welded girders up to 15 tons in weight are used in the winder floor and motor generator floor. High-strength bolting was used for site erection, thus saving time.
The scotch derrick on the left is part of the contractor's erection tackle.
BRITISH CONSTRUCTIONAL STEELWORK ASSOCIATION
Artillery House, Artillery Row
Westminster
London, S.W.1, England
B·C·S·A
STEEL
STRENGTH
SECURITY

OMNIA Concrete Floors installed in the ATV Headquarters building at the remarkable rate of 9,000 square feet every 10 days.



ATV House
Great Cumberland Place, London, W.1.
100,000 square feet on six Floors.
Architect: Lewis Solomon, Kaye & Partners.
Engineers: John De Bremaeker & Partners.
Contractor: George Wimpey & Co. Ltd.

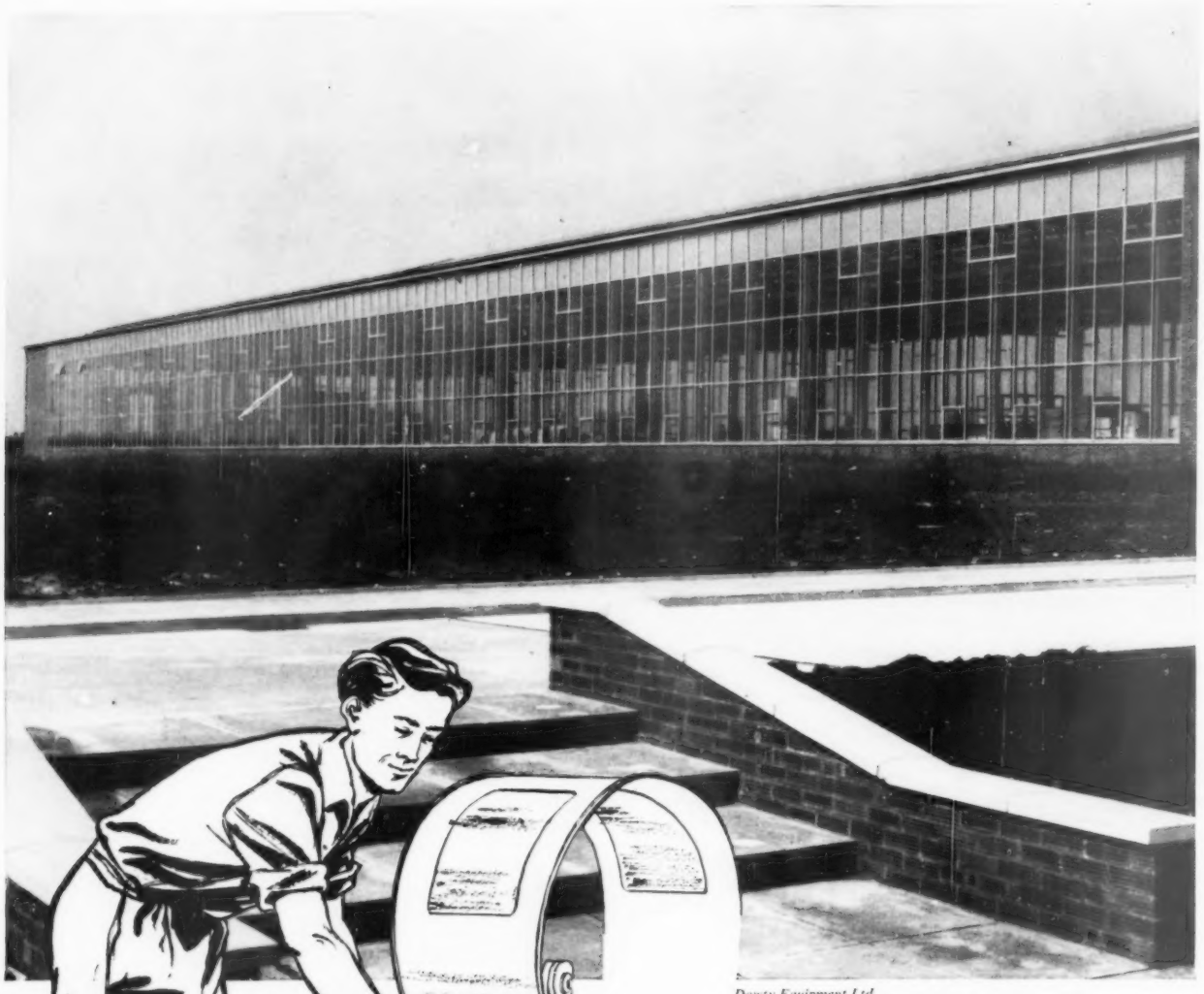
ATV House, London, has nearly 100,000 square feet of Omnia slabs on six Floors with spans up to 26 feet. Large areas of ceiling are completely free from downstanding beams, giving pleasant big or small rooms and ease of partitioning. The Omnia Floor copes equally well with large projects like this and with the very smallest building. It consists of factory-made reinforced planks, and hollow concrete blocks, together with on-site concrete, and is unique in combining the advantages of pre-cast and in-situ techniques.

Light in weight, yet monolithic
Uninterrupted floors and soffits
Needs no shuttering
Easy to transport and handle
Quick and simple to erect
Spans up to 40ft. Adaptable in design
Economical in manufacture and installation

OMNIA CONSTRUCTIONS LIMITED, 121 London Wall, London E.C.2. Monarch 2272/6

The OMNIA Concrete Floor is available in all parts of the country from any of 15 licensed OMNIA Factories:

THE ATLAS STONE CO. LTD., LONDON
THE BLOKCRETE CO. LTD., SOUTHAMPTON
F. BRADFORD & CO. LTD., EDMONTON
BRADLEYS (CONCRETE) LTD., DARLASTON
G. W. BRUCE LTD., ABERDEEN
T. C. CAMPBELL LTD., NOTTINGHAM
COWLEY CONCRETE CO. LTD., ABINGDON
DERWENT CAST STONE CO. LTD., MALTON
DUNBRIK (YORKS) LTD., LEEDS
EDENHALL CONCRETE PRODUCTS LTD., PENRITH
HYDRAULIC PRECASTS LTD., NORWICH
JAMES K. MILLAR LTD., FALKIRK
PRESTATYN PRECAST CONCRETE CO. LTD., PRESTATYN
ST. IVES SAND & GRAVEL CO. LTD., HUNTS
SAMUEL TYZACK & CO. LTD., SUNDERLAND



Dowty Equipment Ltd.
Architect: C. R. Kirby, Esq., A.R.I.B.A.

building for prosperity

Hills Factory Construction Systems—swift, simple, economical—is keeping pace with Industry's demand for expansion. Buildings of every size, from single to five-storey construction, are being erected throughout the country, contributing to the national plan for prosperity.

Please write to us if you would like to receive full information on Hills Factory Construction System.

HILLS
FACTORY CONSTRUCTION SYSTEM

HILLS (WEST BROMWICH) LTD., ALBION ROAD, WEST BROMWICH, STAFFS.
Branches at Manchester, Bristol, Newcastle-on-Tyne, London and Glasgow

P.4

would have

been keen on

KEE KLAMPS

Registered Trade Mark

When 'Four Scotchmen by the name of Adams' built their 'Palace' of the Adelphi at Charing Cross the way in which they elevated the great terrace on vaults above the tidal Thames earned public acclaim for their ingenuity.

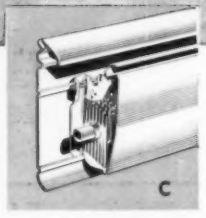
How they would have welcomed Kee Klamps! This unique system of tubular construction provides the architect with opportunities for solving unusual problems which would have been eagerly sought by Robert and his brothers.

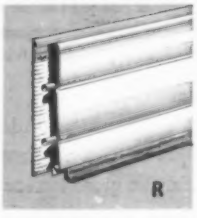
Kee Klamp Engineers, qualified to advise, are freely available to applications of this system.

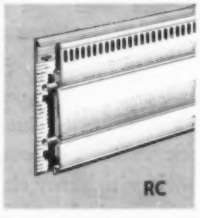
GEO. H. GASCOIGNE CO. LTD.
579 GASCOIGNE HOUSE, READING, BERKS
Telephone READING 54417 (3 lines)

Born Yesterday . . . already the talk of the town

THERE ARE THREE TYPES OF WALLSTRIP







Type C—Recommended for most domestic applications, providing mainly convected heat.

Type R—Institutional model of heavy construction, but shallower from wall to front than Type C, providing mainly radiant heat. Smooth surfaces, free of dust-traps, especially suitable for hospitals and other places where hygiene and cleanliness are vital.

Type RC—Again, an institutional model of heavy construction, similar to Type R but providing a combination of radiant and convected heat.

Copperad WALLSTRIP is a skirting-board that heats. It places the heat where it is most needed—along the outside walls at the normal source of loss.

For a new building—home, office, school, hall, hospital or institution—WALLSTRIP allows you the maximum freedom in aesthetic design. Windows can reach to within 12″ of the floorline; no ungainly, heavy equipment is involved; there is nothing to detract from its flowing lines.

UP TO 15% SAVING IN FUEL AND CAPITAL EQUIPMENT COSTS

Rigorous tests have revealed Copperad WALLSTRIP reduces the heat input required—cuts fuel costs by up to 15%. When WALLSTRIP is installed, up to 15% less heating equipment is required, with consequent savings in the size of the boiler and ancillary equipment. The cost of skirting-board is, of course, eliminated. Moreover, no special equipment is required; it can be installed with the ordinary tools of a heating engineer.

"It is no more expensive than ordinary heating equipment and so much more effective".

Copperad ***Wallstrip***

Warmth from nowhere — EVERYWHERE!

Copperad Limited Head Office & Works: COLNBROOK, BUCKS. Telephone: Colnbrook 2521 (6 lines) Telegrams: Copperad, Colnbrook

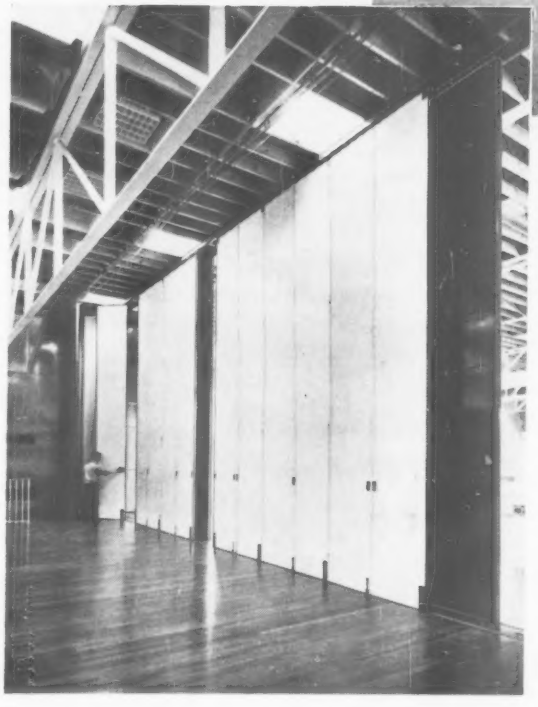
Scottish Office:	**London Office:**	**Birmingham Office:**	*Representatives at:*	*Also at:*
53 George Street, Edinburgh, 2	1 York Street, Baker Street, London W.1	Wolverley House, 18 Digbeth, Birmingham 5	Belfast, Bristol, Cardiff, Glasgow, Leeds, Manchester, Newcastle-on-Tyne, Nottingham	Amsterdam, Auckland (N.Z.), Lisbon, Brussels, Melbourne
Telephone: CALedonian 1562	Telephone: WELbeck 1226/7	Telephone: MIDland 1553		

Canada Associated Companies. Manufacture—National Heating Products Ltd., Montreal. Distribution—The Douglas Engineering Co. Ltd., Toronto.

Elliotts of Reading

CRAFTSMEN IN WOOD AND METAL

Another example of efficient and responsible all round collaboration between Architect and two outstanding specialist firms.



NEW GARRATT GREEN SCHOOL, Earlsfield, London, S.W.17.

Photographs by permission of the Architects' Department of the London County Council.

Contractors : Tersons Ltd.

Henderson

SLIDING DOOR GEAR

for any door, partition or window that slides or folds

The joinery and fixing was by Samuel Elliott & Sons (Reading) Ltd.

'College' Heavy Duty folding partition gear and furniture made and supplied by P. C. Henderson Ltd.

Double sound-resisting sliding and folding partitions 17 ft. 6 in. high, constructed of birch faced ply and sliding on twin floor rails each 56 ft. long, effectively screen off the lecture galleries at the back of the Drama Assembly Hall. When folded the partitions nest away out of sight into a recess or cupboard at both sides of the stage.

Qualified Technical Representatives willingly wait upon Architects everywhere without obligation.

CATALOGUE 55 (184 pages). A copy should be in every room in every Architect's office.

P. C. HENDERSON LTD. *Harold Hill, Romford, Essex.*
Phone: Ingrebourne 41111 *Dial ILA then ask for 41111*

SAMUEL ELLIOTT & SONS (Reading) LTD.
Reading, Berks. *Telephone: Reading 71536-7-8*

H123R

SUSPENDED CEILINGS IN MODERN MATERIALS

Burgess-Sulzer Heated Acoustical Ceiling in the Thorntree Restaurant at the Wilton Works of Imperial Chemical Industries Limited

DRAFTSELE (LONDON) LIMITED

announce the opening of new

LONDON OFFICES

at 231 STATION ROAD, HARROW, MIDDLESEX

(Telephone: Harrow 6567)

which will enable them to give first-class service to London Architects in the design and installation of modern Suspended Ceilings, including

BURGESS (Radiantly-heated and Acoustical), "LUMENATED," ASBESTOLUX, UNITEX, ETC.

* * * * * * *

DRAFTSELE (LONDON) LIMITED

Head Office:* 47 The Parade · Leamington Spa · Warwickshire *Telephone: 1771

(Associate Company of DRAFTSELE LIMITED, Newcastle upon Tyne)

APPROVED FIXING CONTRACTORS AND AGENTS FOR BURGESS ACOUSTIC TILES AND "LUMENATED" CEILINGS

The Perfect Combination

Combinol Gloss Paint

and

Valspar Eggshell Lustre

Combinol Gloss Paint

Tough — Brilliant — High Gloss Finish.
Excellent spreading power and opacity.
Resists all weather conditions.
Recommended for coastal and industrial areas.

Valspar Eggshell Lustre

Beautiful Eggshell Lustre Finish.
Easy to apply with wide brush, roller or spray.
Resists steam and condensation.
For all interior surfaces.

Also available in the British Standard Range (101 colours)

Manufactured by Goodlass Wall & Co Ltd

HOPE'S

announce the issue of a

NEW CATALOGUE OF PATENT GLAZING

52 pages of half full size details of typical installations of roof and sidewall glazing, lantern lights, canopies and domes, together with examples of special work. Architects and Structural Engineers are invited to send for copies now available *gratis* from

HENRY HOPE & SONS LTD

Smethwick, Birmingham & 17 Berners Street, London, W.1

TYLER
TONBRIDGE

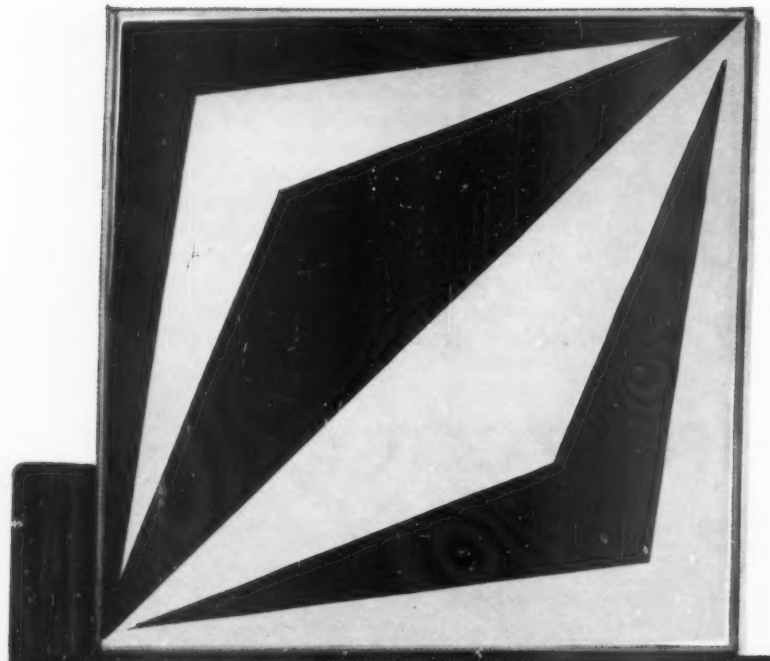
We manufacture Precast Reinforced Concrete Units to meet rapid erectional needs for all types and all sizes of industrial buildings. Standard span sizes range from 16′ 6″ to 60′ — made to meet our own exacting technical specifications and we can supply insulation to comply with the Standard of Thermal Insulation for Industrial Buildings No. 1220 of 1958. Tylers' Units combine durability of construction with a special smooth finish that contributes to the attractiveness of all modern concrete elevations completed and erected by our own highly skilled teams.

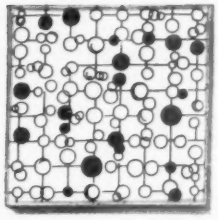
of vital interest to you

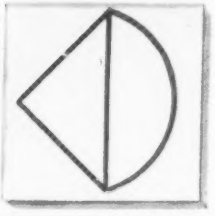
TYLER precast reinforced concrete INDUSTRIAL BUILDINGS

If you have a building problem or an extension to existing premises query—why not get into touch with Tylers of Tonbridge? Our assistance is prompt—and practical—and you have the benefit of actual manufacturer's prices. And, of course, our work conforms to the B.S.S. Code of Practice C.P. 114/57. Send for our interesting literature.

E. W. TYLER & CO. LTD., Verdant Works, Cannon Lane, Tonbridge, Kent. Tel: Tonbridge 4024/5

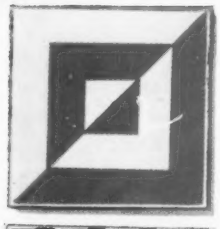


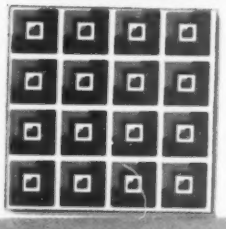




Plan with PILKINGTON'S tiles

Pilkington's offer a carefully selected and balanced range of plain coloured tiles in various finishes and a large variety of decorated tiles suitable for all types of buildings. Pilkington's Design Department is at your service to give you any advice or assistance you may require.





Sample packs of our different ranges of colours and a brochure illustrating the full range of screen printed tiles will be supplied on receipt of this completed coupon.

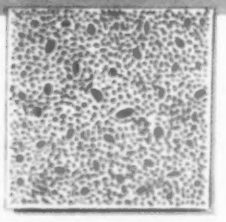
NAME _____

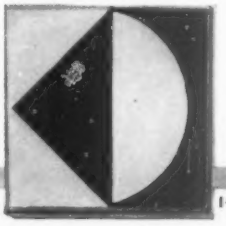
FIRM _____

ADDRESS _____

PLAIN/SCREEN PRINTED *(delete one if both not required)*

PILKINGTON'S TILES LIMITED
CLIFTON JUNCTION · NEAR MANCHESTER





1473 ®

Jonwindows | *Curtain Walling*

Administration Block for the Mersey
Division of the Bowater Organisation at Ellesmere Port.
Architects : Farmer & Dark, F/F.R.I.B.A.
Contractors : J. Gerrard and Sons Ltd.

JOHN WILLIAMS OF CARDIFF LTD

EAST MOORS ROAD · CARDIFF · Tel: CARDIFF 33622 (12 lines) Telex 49303

DAWNAYS
STEELWORK

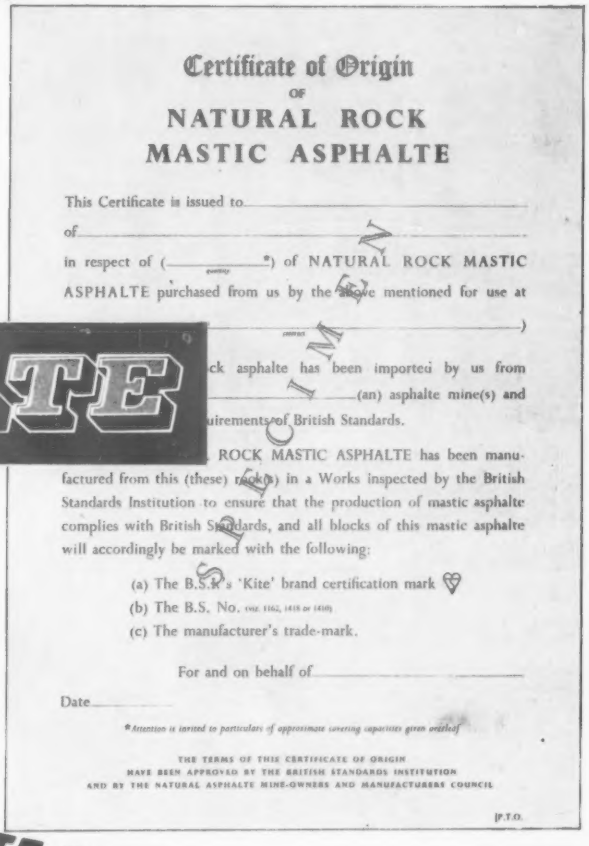
Specialists in the design
fabrication and erection of riveted
and welded steel-framed structures
of every description

DAWNAYS LIMITED
BRIDGE & STRUCTURAL ENGINEERS

STEELWORKS RD., BATTERSEA, LONDON, S.W.11.
Telephone BATTERSEA 2525 (10 lines)

ALSO AT: SWANSEA · CARDIFF · WELWYN GARDEN CITY · NORWICH · HULL
SOUTHAMPTON · ROMFORD · VICTORIA STREET, S.W.1

When specifying NATURAL ROCK MASTIC ASPHALTE insist upon a CERTIFICATE OF ORIGIN



Certificate of Origin
OF
NATURAL ROCK
MASTIC ASPHALTE

This Certificate is issued to _____
of _____
in respect of (_____*) of NATURAL ROCK MASTIC ASPHALTE purchased from us by the above mentioned for use at _____)

_____ rock asphalte has been imported by us from _____ (an) asphalte mine(s) and _____ requirements of British Standards.

_____ ROCK MASTIC ASPHALTE has been manufactured from this (these) rock(s) in a Works inspected by the British Standards Institution to ensure that the production of mastic asphalte complies with British Standards, and all blocks of this mastic asphalte will accordingly be marked with the following:

(a) The B.S.I.'s 'Kite' brand certification mark
(b) The B.S. No. viz. 1162, 1418 or 1410
(c) The manufacturer's trade-mark.

For and on behalf of _____

Date _____

* Attention is invited to particulars of approximate covering capacities given overleaf

THE TERMS OF THIS CERTIFICATE OF ORIGIN
HAVE BEEN APPROVED BY THE BRITISH STANDARDS INSTITUTION
AND BY THE NATURAL ASPHALTE MINE-OWNERS AND MANUFACTURERS COUNCIL

P.T.O.

SPECIMEN

OF THE ROCK asphalte to be used in the manufacture of mastic asphalte.
The terms of the certificate have been approved by the British Standards Institution and by the Natural Asphalte Mineowners and Manufacturers Council, and is issued by the rock mastic asphalte manufacturing members of the Council.

Regd. *Trade Mark*

Specimens of the certificate and technical literature are available from

THE NATURAL ASPHALTE MINEOWNERS & MANUFACTURERS COUNCIL

14 HOWICK PLACE,
LONDON, S.W.1.
TEL: VICTORIA 1600

The New Towns buil

APSLEY GRAMMAR SCHOOL
Architects:
Johns, Slater & Haward
Builders:
Leslie & Co. Ltd

BENNETTS END
SECONDARY SCHOOL
Architect:
County Architect, Herts. C.C.
Builders:
Leslie & Co. Ltd

WESTERN TERRACE
FLATS AT ADEYFIELD
Builders:
Leslie & Co. Ltd

POST OFFICE
SUPPLIES DEPOT
Architect:
W. Kendall, A.R.I.B.A. of M.O.W.
Builders:
Humphreys Ltd

UNIT WORKSHOPS
Builders:
F. W. Sears & Sons Ltd

"THE NEW VENTURE"
PUBLIC HOUSE
Builders:
Wm. King & Sons Ltd

COMMUNITY HALL
ADEYFIELD
Builders:
Brown & Clark Ltd

CHURCH AT WARNERS END
Builders:
Keel & Reay

TOWN CENTRE
Builders:
Leslie & Co. Ltd

TOWN CENTRE
Builders:
Leslie & Co. Ltd

with Crittall Windows

FLATS AT ADEYFIELD
Builders:
Geo. Wimpey & Co. Ltd

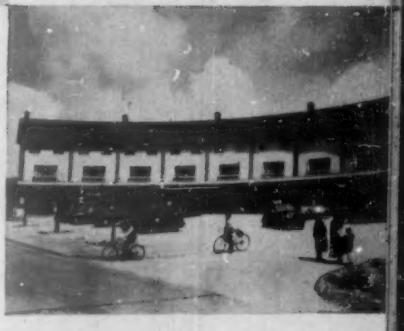
ROTAX FACTORY
Architects:
Clifford Tee & Gale
Builders:
J. Jarvis & Sons Ltd

HOUSING AT GADEBRIDGE
Builders:
Leslie & Co. Ltd

HOUSING AT GADEBRIDGE
Builders:
C. Miskin & Sons Ltd

SHOPPING CENTRE
AT WARNERS END
Builders:
Keel & Reay

SHOPPING CENTRE
AT CHAULDEN
Builders:
C. Miskin & Sons Ltd



Hemel Hempstead New Town

Except where otherwise stated, the buildings were designed by the Hemel Hempstead Development Corporation under the direction of the Chief Architect, H. Kellett Ablett, F.R.I.B.A., M.T.P.I.

CRITTALL

THE CRITTALL MANUFACTURING CO. LTD · BRAINTREE · ESSEX · BRANCHES & DEPOTS THROUGHOUT THE COUNTRY

tmw/107

St. George's House, Wood Street, London, E.C.2.
new City Headquarters of
THE NESTLÉ COMPANY LIMITED.

Architects: T. P. Bennett & Son
Contractors: Sir Robert McAlpine & Sons Ltd.

Air Conditioning, Heating,
Electrical Installation and Sprinklers
by Matthew Hall & Co. Ltd.

THE
MATTHEW HALL
GROUP OF COMPANIES

• AIR CONDITIONING • HEATING • ELECTRICITY
• SANITATION • SPRINKLERS & FIRE PROTECTION

EST. 1848

MATTHEW HALL

MATTHEW HALL HOUSE, DORSET SQUARE, LONDON, N.W.1.

Glasgow Manchester Bristol Belfast Johannesburg Germiston Durban
Cape Town Welkom Bulawayo Salisbury (Central Africa) Ndola West Indies

DESIGNED ACOUSTICS

A comprehensive service to the architect

As specialist Acoustic Engineers we have the "know-how" when it comes to Noise.

We offer an independent service to the Architect which covers every aspect of Acoustics. From preliminary investigation and analysis it proceeds to intelligent planning and design, based on the accepted principles of acoustic engineering without which there can be no correct solution to a sound problem. Thence it extends to detailed specification and the final work of installation, the efficiency of which we back with a WRITTEN UNDERTAKING.

In addition, our qualified Architectural staff will gladly submit detailed drawings and perspectives for comprehensive schemes in which guaranteed standards of acoustic efficiency and aesthetic interior treatments are successfully combined.

This is a special feature of our service.

Some of the things we do

- ★ *Sound resistant doors, windows and partitions.*
- ★ *Acoustic correction and design for lecture theatres, cinemas, assembly halls and auditoria, and for television recording and broadcasting studios, etc.*
- ★ *Anechoic and reverberation chambers, audiometry rooms, testing chambers, etc.*
- ★ *Silencing of air-conditioning and ventilation systems.*
- ★ *Commercial, industrial, marine and aviation acoustics of every kind.*

SOUND CONTROL LTD

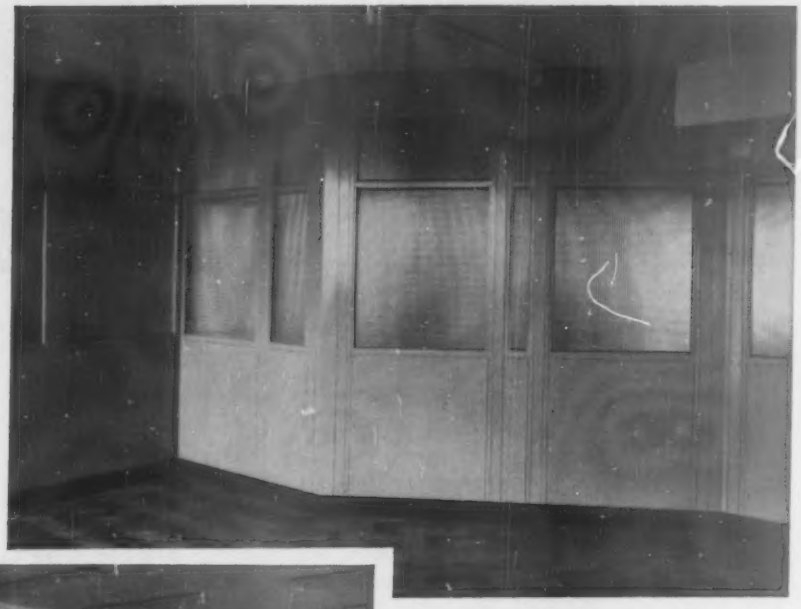
A MEMBER OF THE HALL-THERMOTANK GROUP OF COMPANIES

Acoustic Engineers

COLNESIDE WORKS: WEST DRAYTON, MIDDLESEX.
West Drayton 3685 (5 lines)

SCOTTISH OFFICE: 10 HOTHWELL STREET, GLASGOW, C.2.
Central 6571/2

SPEEDY, RIGID, DEMOUNTABLE and adjustable to any layout



Photographs show an installation in the offices of Lloyd's Register of Shipping, Norfolk House, Croydon.

Assembled from a range of standard units, Harvey Steel Partitioning provides a rigid yet easily erected structure with a high-grade stove-enamelled finish.

The system is very flexible, and adaptable to any layout.

Supplied in full height solid or glazed; or in glazed or unglazed barrier form.

Available in single or double cased construction; the double cased type providing a high degree of sound and thermal insulation. Wiring is concealed and flush fitting switches and sockets can be fitted. Partitions can be moved and the arrangement of panels varied as desired.

HARVEY

OFFICE PARTITIONING IN STEEL

Send for full particulars to:

G. A. HARVEY & CO.
(LONDON) LTD.

WOOLWICH ROAD, LONDON, S.E.7
Telephone: GREenwich 3232 (22 *lines*)

Steel office furniture can also be supplied: DESKS · DESKING · TABLES · CABINETS · BOOKCASES · CUPBOARDS · WARDROBES · ETC.
Stove-enamelled finish in matching or contrasting colours.

SF 25

Shower Song

Bending and turning and gaily carolling
Loving the feel of the tropical rain
Leaving to Leonard the job of controlling
Once she gets in she just wants to remain.

Gone are the quirks of the old fashioned mixer
Everything else but never just warm,
Thermostat Leonard is fitted to fix her
And keep the temp. fast at divinity's norm.

"Keeping the temp. fast" is just what Leonard control by thermostat does. It turns stone-cold and stinging-hot into steady warm—immovable until the bather moves it. It makes the shower, the Leonard shower, the best bath in the world. That's why the Leonard valve has come to be specified by architects everywhere not just for showers in hospitals and schools, but also in factories and mines and ships.

Please let us tell you more about Leonard thermostatic valves. We have composed literature to cover all applications in detail. Write for engrossing publication S.B.70 to: Walker Crosweller, Cheltenham. The impetuous should 'phone us at Cheltenham 56317 or, in London, at Holborn 2986.

WALKER, CROSWELLER
& COMPANY LIMITED

CHELTENHAM. ENGLAND.

A remarkable new range of superb lighting glassware, in clear, amber, ruby, and blue, completely interchangeable on a number of basic ceiling and wall-bracket assemblies. Detailed information from Atlas Lighting Limited, Thorn House, Upper St. Martin's Lane, London, WC2

DTV

Shanks

· BATHROOM FITTINGS ·

SHANKS & CO., LTD., TUBAL WORKS, BARRHEAD, SCOTLAND

Two miles
of
Roneo
library
shelving
in
Sheffield
University

Roneo equipment was chosen by the architects, Gollins, Melvin, Ward & Partners, for the new library at Sheffield University. Shelving, equivalent to over two miles in length, has been installed in the form of a four-tier book stack and a two-tier reading room both fitted with drop-down readers' shelves. In the reading room Roneo were responsible for the intermediate floor and staircases providing access to the tiers. Trolleys were also supplied as well as ancillary equipment for the library offices. Ventilation was provided through specially designed uprights, and end cover panels accommodate electrical wiring. Roneo are specialists in office and industrial partitioning, desking, cupboards, shelving, filing cabinets and systems. Specialist advice and information is available through the Roneo Contracts and Planning Division on any problems concerning equipment for offices, factories, banks, libraries, etc.

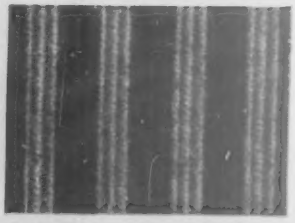
call in RONEO *and do the job properly!*

RONEO LTD · SOUTHAMPTON ROW · WC1 · TEL: HOLBORN 7622
YRW/681

Replin
fine furnishing fabrics

Vendome Restaurant

A hard wearing & easy to clean worsted tapestry weave. 34 plain colours, patterns and stripes available from stock in short lengths. Exclusive designs and crests, stripes, panels woven to order.



British Replin Ltd. 2 South Audley Street., London W1
tel: GRO 6692. Mill: Ayr, Scotland. tel: 63275

Canterbury Cathedral

Architectural Heritage . . .

In a Modern World.... today, buildings are erected speedily, and the desire for high quality flooring continues to be in greater demand. GRANWOOD meets the challenge. Granwood is fire and damp resisting, and is now available in ten colours. It is proof against dry rot, vermin and insects. It does not expand or contract and is eminently suitable for electric and other forms of under floor warming.

GRANWOOD FLOORING CO LTD

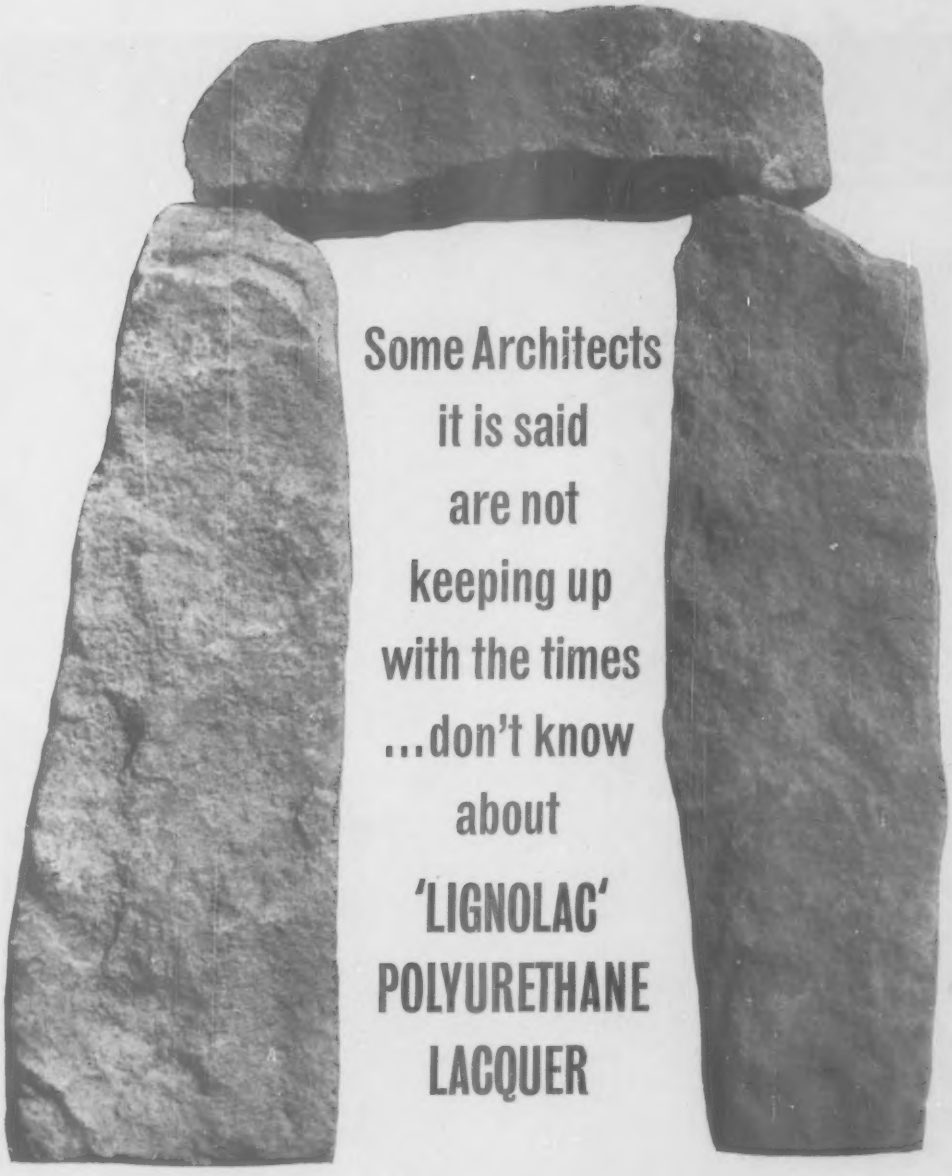
RIDDINGS · DERBY *Telephone:* Leabrooks 341/2/3 *Telegrams:* Granflor, Alfreton

London Office: BATTLEBRIDGE HOUSE, 87/93 TOOLEY STREET, LONDON, S.E.1. *Tel.:* HOP 2929

SPECTRUM FABRICS
Satisfy by design
Ask for details of the full SPECTRUM range
of fine woven fabrics. Pattern books will be sent
on request to architects and designers.

SPECTRUM FABRICS LIMITED | WALTER STREET · BLACKBURN LANCASHIRE

TGA 51



Some Architects it is said are not keeping up with the times ...don't know about 'LIGNOLAC' POLYURETHANE LACQUER

WINTER PAINTING PAYS

Allocating some of your interior painting to winter months means — more labour immediately available: speedier service: easier to plan paint schedules: keener prices with overtime rates unnecessary: and of course the finest finish possible with modern quick-drying products of British Paints Limited.

..... a totally new type of clear finish that completely supersedes all conventional materials for exterior cladding and floors.

Lignolac Polyurethane Lacquer is a two pack product consisting of base and hardener. It offers the architect a coating of exceptional hardness and great durability. Used for exterior cladding, it ensures a handsome, deep gloss finish that will withstand severe outdoor conditions with unequalled efficiency; a remarkable protective coating with outstanding resistance to water and to mild chemical action; a material in fact that few, if any, can match today.

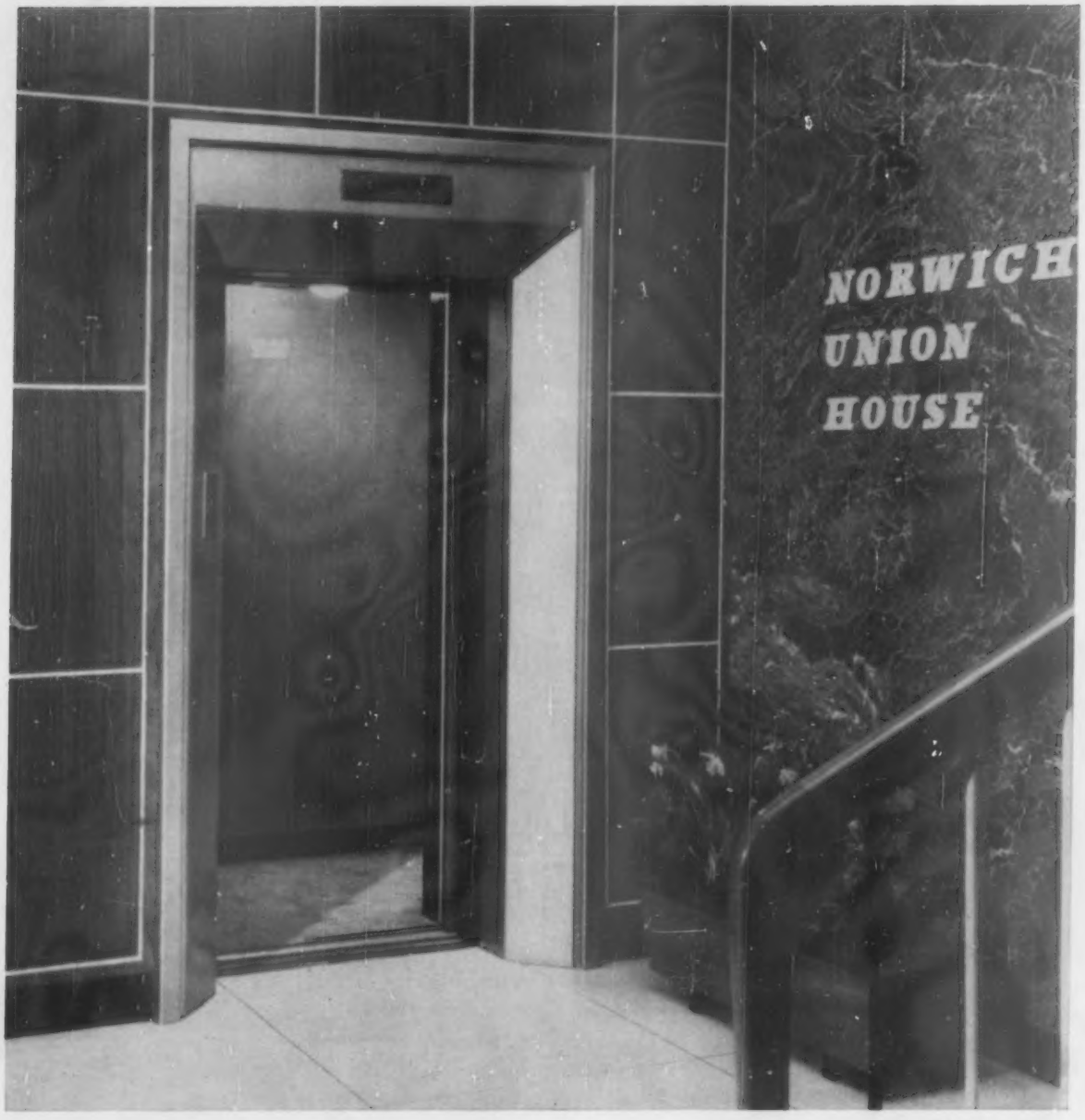
Easily applied on the site by spray or brush, Lignolac Polyurethane Lacquer can be overcoated in 4-6 hours... has a low flame spread... never cracks... and dries with a rich deep build.

FOR FLOORS TOO! Outstanding too as a floor coating — for wood, lino, or tile (except PVC)— Lignolac Polyurethane Lacquer takes all the impact of wear and dirt itself, has a shining finish that *stays* shining for many months without polishing and a non-slip surface that will not chip, mark or flake.

BRITISH PAINTS LIMITED

PORTLAND ROAD, NEWCASTLE UPON TYNE, 2 · NORTHUMBERLAND HOUSE, 303-306 HIGH HOLBORN, LONDON, W.C.1 · 31 WAPPING, LIVERPOOL

Belfast, Birmingham, Bristol, Cardiff, Glasgow, Leeds, Manchester, Norwich, Plymouth, Sheffield, Southampton, Swansea and all principal towns.



Norwich Union Insurance Societies
Norwich Union House, 8-12 South Parade, Nottingham
Architects: Evans, Cartwright & Woollatt, F/F.R.I.B.A.

H & C
ELECTRIC PASSENGER & GOODS
LIFTS

H&C LIFTS
HAMMOND & CHAMPNESS LTD.
Gnome House, Blackhorse Lane
Walthamstow, London E.17
Telephone: LARkswood 1071

SIMMS
SONS & COOKE LTD

The new Library for

The University of Sheffield

ARCHITECTS: Messrs. Gollins, Melvin, Ward & Partners, 15 *Manchester Square, London, W.*1

Main Contractors:

W. J. Simms Sons & Cooke Ltd

W. J. SIMMS SONS & COOKE LTD

Head Office: HAYDN ROAD, SHERWOOD, NOTTINGHAM *Nottingham* 66264

Works: Lenton, Nottingham

Home and Overseas Sales: 12 York Buildings, Adelphi, London, WC2 *Trafalgar* 3383

Branches: Birmingham, Leeds, London, Manchester

The contract for the supply of all furniture for phase I of the Derby College of Technology was awarded to Swedish Modern. Conran desks, cabinets, tables and work benches were specified; much of the furniture was selected from stock, the remainder was developed from production items designed in conjunction with the architects Grenfell Baines & Hargreaves, Derby. The furniture illustrated indicates the scope of the contract. (Much was within the University Grants Committee scale): the specially designed items included a wide range of classroom and laboratory equipment suitable for use in other installations.

Furniture for Education

at Derby and District Colleges of Art and Technology

Catalogues and further details are available and will gladly be supplied on request.

Manufactured by:

Conran Furniture, 6 Cadogan Lane, S.W.1. BELgravia 3161

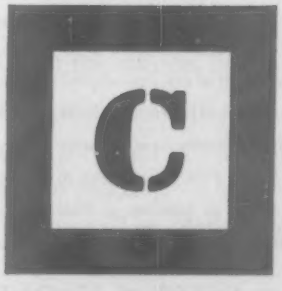
C

and *at the new library building of the University of Sheffield*

The contract for the supply of purpose made loose furniture, stock desks, cabinets and special built in fitments was awarded to Conran Contracts. Details of many of the items were prepared from the designs of the architects Messrs. Gollins, Melvin, Ward and Partners.

Standard Conran desks and cabinets complied with the architects' requirements and were specified in the contract. Conran Contracts' considerable experience in the design and manufacture of furniture for special purposes is at the disposal of architects.

Further information will gladly be supplied on request.



Library at Sheffield University

(see page 307)

Architects
Gollins, Melvin, Ward & Partners

Suspended ceilings of perforated panels in fibrous plaster, backed with Rocksil, made by

CLARIDGES

(PUTNEY) LIMITED

Ravenscourt Road, London, W.6

Telephone : RIVerside 7222

ARCHITECTURAL MODELLERS AND PLASTERERS
ACOUSTIC CEILING PANEL SPECIALISTS

We will make panels to any size, with perforations to architects' own designs.

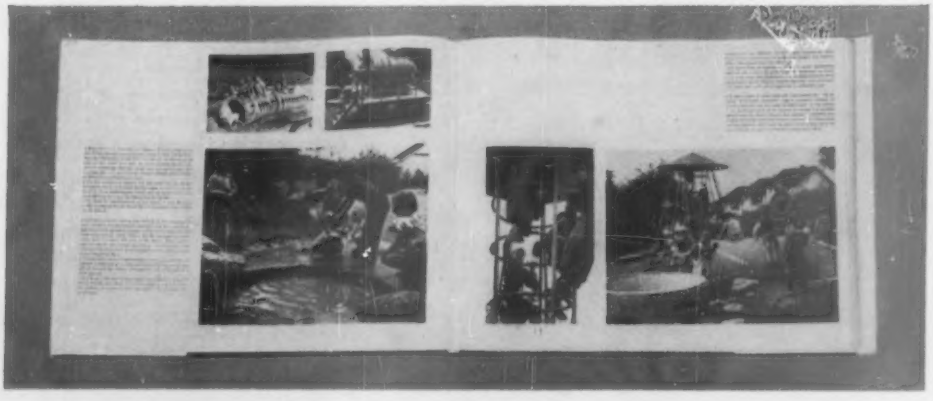
Stock panels range from 12″ × 12″ to 8′ 3″ × 2′ 0¾″. Pegholed or slotted up to 3′ 4″ × 3′ 4″. Larger sizes slotted.

Playgrounds and Recreation Spaces

Introduction by Alfred Ledermann and Alfred Trächsel. Translated by Ernst Priefert

8¾″ by 11⅛″. 176 pages with 302 halftones and 83 line illustrations. 63s. 0d. postage 2s. 0d.

just published



It is now recognised by planners and local authorities that imaginatively-designed children's playgrounds and adult recreation spaces should be regarded as an essential amenity for all urban areas of any size, whether new or old; but so far very few really successful examples have appeared in the British Isles, and children in towns and cities continue, at their peril, to play their games in streets and on roads. On the Continent, in Scandinavia and in the U.S. however, the subject is being tackled with the seriousness and care that it deserves, and there are many interesting and successful solutions to be seen.

This book, after short introductory essays written by two of Europe's leading playground designers, consists of photographs and plans of a great variety of interesting examples taken from many countries. Each scheme is accompanied by a short explanatory text, together with constructional details. The examples shown range from the smallest and most inexpensive to large schemes covering many acres, and they contain a wide variety of ingenious ideas, constructions and equipment for play and recreation.

THE ARCHITECTURAL PRESS 9-13 QUEEN ANNE'S GATE WESTMINSTER SW1

HIGHLIGHTING a lighting problem

Architects: Gollins, Melvin, Ward and Partners

...in the new library at Sheffield University

L.E.F. Raising and Lowering Gear was the answer to the problem of servicing modular lighting in this new library. Forty-six sets of *L.E.F.* Gear were installed, each operating a light fitting which had to be returned to its ceiling position with only an $\frac{1}{8}''$ clearance all round! Early consultation between *L.E.F.*, the Electrical Consultant and the Contractors, and close liaison throughout ensured the success of this installation.

LONDON ELECTRIC FIRM LTD. have solved many difficult problems involving maintenance of lighting in all types of building and in street systems throughout the country.
Discuss *your* problem with them, they will be glad to advise you.

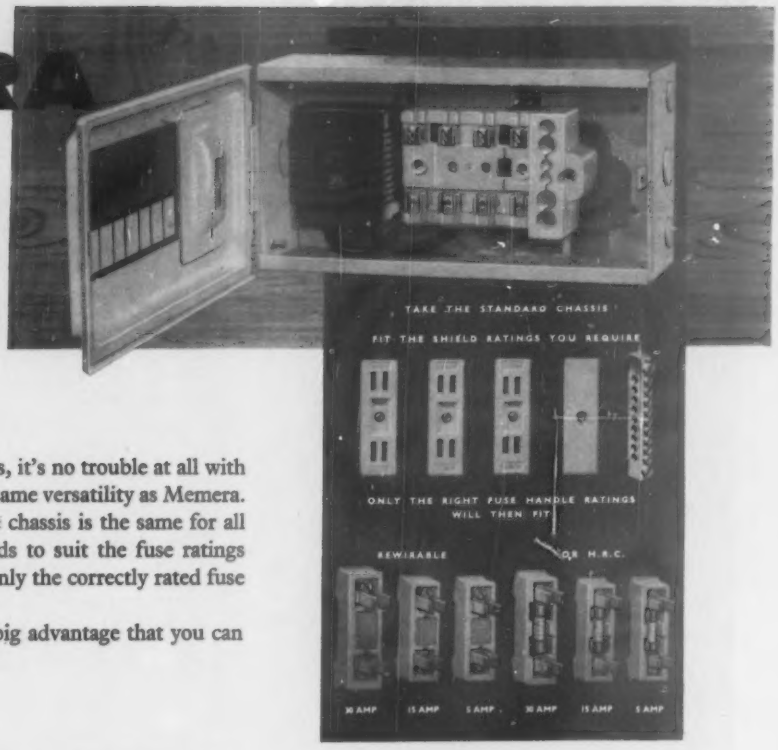
L&F

LONDON ELECTRIC FIRM LTD. · Brighton Road · South Croydon · Surrey · Telephone: Uplands 4871.

TM.129

MEMERA

the unit which set a new high standard in the industry . . .



If the job calls for unusual fuse combinations, it's no trouble at all with Memera. No other equipment gives you the same versatility as Memera.

The system is so delightfully simple. The chassis is the same for all combinations. Just fit the appropriate shields to suit the fuse ratings you need for the job. Once these are fitted, only the correctly rated fuse handles can be inserted.

And of course with Memera there is the big advantage that you can use either rewirable or H.R.C. fuses.

MEM MIDLAND ELECTRIC MANUFACTURING CO. LTD.
TYSELEY · BIRMINGHAM 11

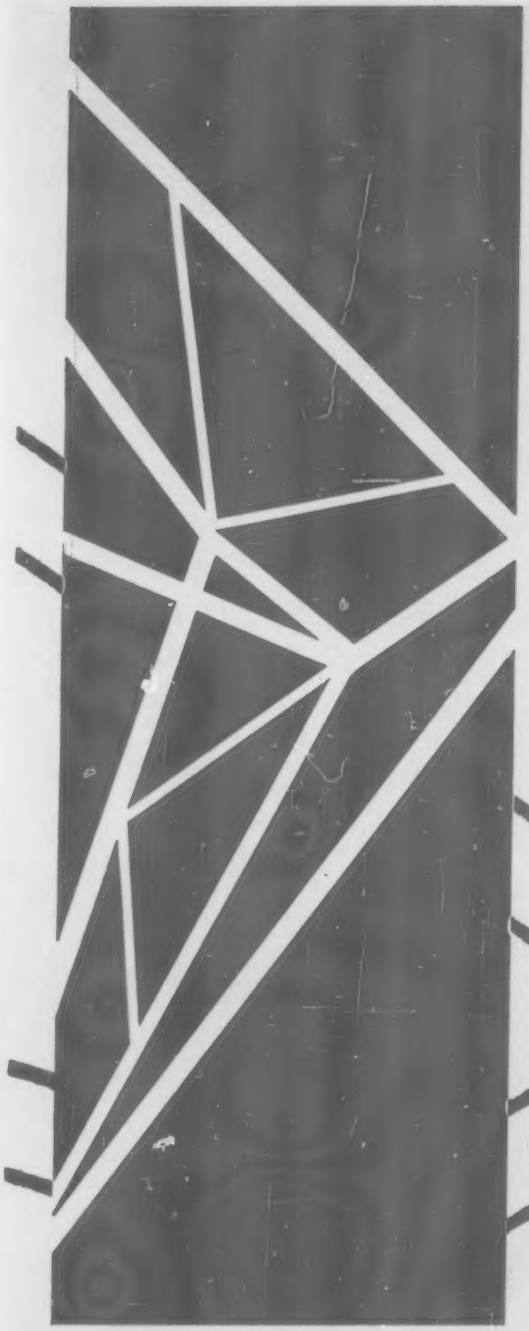
NOEL VILLENEUVE design

Registration Applied For

A standard fitting Model No. TD.2/G in three sizes, 10½", 13½" and 20" dia.

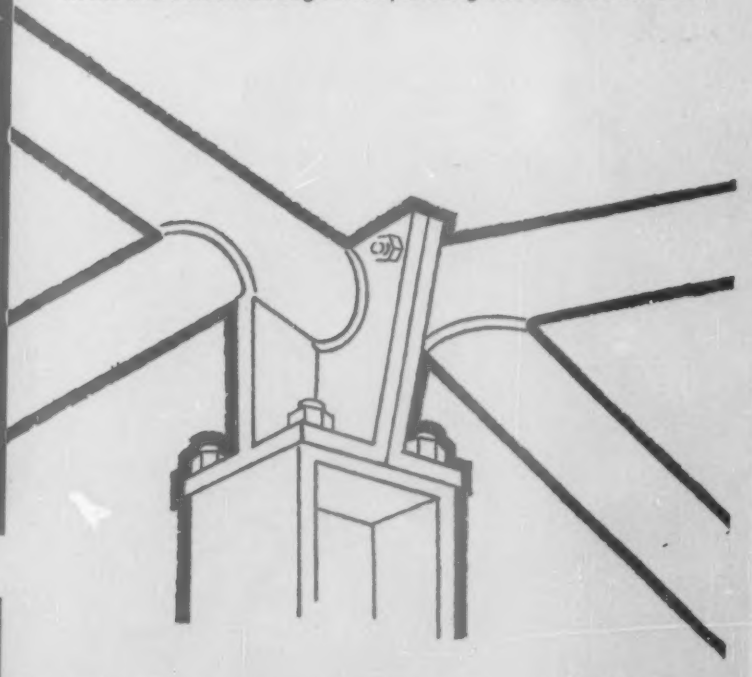
ALLOM HEFFER
AND COMPANY LIMITED

17, MONTPELIER STREET, KNIGHTSBRIDGE, LONDON, S.W.7 TELEPHONE: KNIGHTSBRIDGE 6897-8



MODERN PRODUCTION METHODS SPEED BUILDING DEVELOPMENT

The Arcon system of construction simplifies planning, eliminates delays and enables erection to proceed more efficiently and faster than by other means. This step forward is achieved through the use of standardized major structural components of the highest quality manufactured by modern "assembly line" techniques, and the development of speedy erection methods on site. The wide Arcon range permits full expression of functional or aesthetic requirements. Arcon has simplified the construction of over 500 industrial buildings of many types in the U.K. and has proved equally successful in 105 countries overseas. We welcome an opportunity of showing how Arcon construction can help the most discerning client and his consultant at home and abroad through a full planning and erection service.



Arcon

SIMPLIFIES
building development

TAYLOR WOODROW (ARCON) LTD., 41 WELBECK STREET, W.1. Tel.: HUN 8666

The sponsor companies forming the Arcon Group are: IMPERIAL CHEMICAL INDUSTRIES LTD · STEWARTS AND LLOYDS LTD
THE UNITED STEEL COMPANIES LTD · THE CRITTALL MANUFACTURING CO. LTD · TAYLOR WOODROW (ARCON) LTD

I am only a newcomer — I don't really know what life is all about yet—but they tell me the Engravers Guild are wonderful Blockmakers and Photographers. Have you tried them?
Windsor House, Cursitor Street, E.C.4 Tel. No.: HOL. 1727

When luxury must be tough...

When an architect's specifications are maximum luxury with maximum wear, the carpet that can meet them triumphantly is the Gold Shield Wool Brussels by Carpet Trades, a woven Wilton with a pure wool permanently moth-proofed pile securely locked through to the back. Gold Shield Wool Brussels shows no tread marks, lasts almost twice as long as cut pile Wilton of equivalent quality. Gold Shield Wool Brussels has proved itself outstandingly suitable for hotels, restaurants, cinemas, and stores like Edwin Jones in Southampton, shown above.

Gold Shield is made in two plain qualities, in eight standard colours, chosen from the British Colour Council's Directory of Colours for Interior Decorators and Town and Country Series 2. Gold Shield is also made in two patterned qualities in a standard range of seven designs.

Special designs and colours can be commissioned on consultation. Architects are invited to write for a free eight page Monograph, giving full details of all the Gold Shield Wool Brussels qualities, to CARPET TRADES LIMITED. Carpets are supplied only through normal trade channels.

CARPET TRADES LIMITED
G.P.O BOX 5 · MILL STREET · KIDDERMINSTER

'The Golden Shield', symbol of fine quality, identifies the products of Carpet Trades Limited, Kidderminster.

Race seating, now specified by many universities, is here shown in the new Medical School, University of Liverpool (architects: Weightman & Bullen)

lecture theatre seating

Race lecture theatre seating provides a series of components from which rows of any length can be economically shipped and assembled on site
It is adaptable to any step height or for fixing to a flat floor, the length of backrest varying proportionately to accommodate a writing shelf at the correct height for the row behind
Seats have a simple gravity self-tipping action and are covered in a heavy quality P.V.C. coated fabric; steel uprights are stove-enamelled; writing shelves and pre-formed plywood backrests (upholstered if preferred) are of lacquered mahogany

For further details write or telephone:

RACE FURNITURE limited

Sentinel House Union Road Clapham SW4 MACaulay 2215/7

NEW BOOKS FOR CHRISTMAS

A selection from The Architectural Press

A History of Modern Architecture *by Jürgen Joedicke. Translated by James Palmes.*

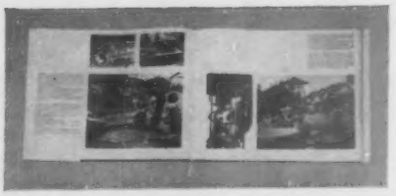
THE FIRST general history of the modern movement in architecture available in English, this is also the most comprehensive, most compact and best illustrated book on the subject yet published in any language. Professor Joedicke's approach is straightforward: he accepts the classic distinction between the age of the pioneers and the age of the masters, so that the contributions of famous architects can be found where one expects to find them. He also gives a full account of the part played by new structural materials and new spatial concepts in the creation of the new architecture. 10¼ *by* 7¾ *in.* 244 *pages with* 400 *halftones and* 50 *line illustrations, a bibliography and an index.* 45*s. net, postage* 2*s.*

A Testament *by Frank Lloyd Wright*

NOT MERELY a new book *about* Frank Lloyd Wright, but this time a book *by* the master, his first in ten years: prophetically titled—it is the last book he wrote, and was completed shortly before his death. In it he has distilled the essence of his eventful life and work with unprecedented range and fascination, has observed critically our present educational systems, our metropolitan living habits, our architecture, our democracy; reaffirmed his faith in youth; and forecast the qualities of the ideal city, the nature of our future homes—even of our future culture. Of the volume's two major parts, Book One is autobiographical; and 'Book Two—the New Architecture' presents an illuminating synthesis of Frank Lloyd Wright's nine great principles, the foundation of his creative impulse and ideas—his TESTAMENT. 12½ *by* 9½ *in.* 256 *pages. Portrait frontis., over* 200 *illustrations.* 70*s. net, postage* 2*s.* 3*d.*

Architecture U.S.A. *by Ian McCallum, A.R.I.B.A.*

SINCE 1950, AMERICA a land of opportunity and a land of achievement, has attained a dominant place in world architecture. But it has remained largely unknown territory for want of a comprehensive book. *Architecture U.S.A.* remedies this omission by surveying the field in breadth and depth, studying not only the major living American architects but also their antecedents—the great pioneers and the social and historical developments that have carried their ideas to fruition: from H. H. Richardson and Louis Sullivan to Richard Neutra, Charles Eames and still younger men. Ian McCallum has combined first-hand experience with extensive research to draw a group portrait of the most stimulating assembly of architectural minds in the world today. 11½ *by* 8¾ *in.* 216 *pages, with* 474 *halftone and* 90 *line illustrations; bibliography.* 63*s. net, postage* 1*s.* 9*d.*



Playgrounds and Recreation Spaces *Introduction by Alfred Ledermann and Alfred Trächsel. Translated by Ernst Priefert.*

IMAGINATIVELY DESIGNED children's playgrounds and adult recreation spaces are now widely recognized to be an essential amenity for all urban areas: but few successful examples have yet appeared in Britain, and children continue to play in the streets. In some European countries and in the U.S.A., however, the subject is receiving serious attention. This book, introduced by two leading European playground designers, consists of photographs and plans of a great variety of interesting examples of successful solutions from many countries. 8¾ *by* 11¼ *in.* 176 *pages,* 302 *halftones,* 83 *line illustrations.* 63*s. net, postage* 2*s.*

Architects' Working Details Volume 6 : Foreign Examples *edited by D. A. C. A. Boyne and Lance Wright, A.R.I.B.A.*

THIS, THE SIXTH VOLUME, in a well-established, popular series, is of exceptional importance: all the details illustrated are of post-war foreign buildings. 11¾ *by* 8¾ *in.* 160 *pages, 'Wire-O' bound, to open flat; comprehensive series index.* 25*s. per vol. Postage:* 1 *vol.* 1*s.* 9*d.;* 2 *vols.* 2*s.* 3*d.;* 3 *vols.* 2*s.* 9*d.;* 4 *vols.* 3*s.* 3*d.;* 5 *vols.* 3*s.* 6*d.;* 6 *vols.* 3*s.* 6*d.*

OTHER RECENT BOOKS

The Functional Tradition in early industrial buildings, *by J. M. Richards, A.R.I.B.A. Photographs by Eric de Maré, A.R.I.B.A.* 'FUNCTIONALISM', A TERM closely associated with modern architecture, is not a new invention, as the author lucidly shows in a text illustrated with fascinating photographs, specially taken by Eric de Maré, of all kinds of excellent buildings, erected just after the Industrial Revolution all over Britain. 10 *by* 7¾ *in.* 200 *pages with over* 260 *photographs.* 36*s. net, postage* 1*s.* 9*d.*

Modern Flats, *by F. R. S. Yorke, F.R.I.B.A. and Frederick Gibberd, C.B.E., F.R.I.B.A., M.T.P.I.* A STRAIGHTFORWARD PICTURE BOOK recording some of the most interesting and distinguished recent flat buildings in no less than fifteen different countries. 11¼ *by* 8¼ *in.* 212 *pages including over* 270 *halftone and* 215 *line illustrations.* 63*s. net, postage* 2*s.*

The Chapel at Ronchamp: les carnets de la recherche patiente, *by Le Corbusier. Translated by Jacqueline Cullen.* A BEAUTIFUL and significant book about one of the most controversial religious buildings of our time. 8 *by* 7¼ *in.* 136 *pages, over* 150 *illustrations, Typography, also* 4*-colour jacket, by Le Corbusier.* 25*s. net, postage* 1*s.* 2*d.*

The Design and Practice of Joinery, *by John Eastwick-Field, B.A.Arch. (Hons.), A.R.I.B.A. and John Stillman, Dipl. London, A.R.I.B.A. Foreword by Robert H. Matthew, C.B.E., M.A., A.R.I.B.A. Drawings by Robert Maguire, A.R.I.B.A.* THE ONLY AUTHORITATIVE, up-to-date book about joinery practice. 10 *by* 7¾ *in.* 224 *pages, over* 290 *illustrations.* 42*s. net, postage* 1*s.* 9*d.*

The Landscape of Power, *by Sylvia Crowe, P.I.L.A.* A BOOK FOR EVERYONE who cares about Britain's landscape. Miss Crowe shows that, if properly handled, giant buildings and their accessories can be incorporated in the landscape without destroying it. 8¾ *by* 5½ *in.* 116 *pages, over* 70 *illustrations.* 16*s. net, postage* 10*d.*

Specification 1960, *edited by F. R. S. Yorke, F.R.I.B.A.* STANDARD ANNUAL REFERENCE work for architects, engineers, surveyors and all engaged in building and public works, now in its 61st year. The many changes in this edition include one new section, *Landscape Architecture,* by J. St. Bodfan Gruffydd, *F.I.L.A.*, covering procedure and specification clauses for landscape architects; the separation of *Timber Engineering* from *Carpenter and Joiner*, the addition of 'Supermarkets' in *Shops*; and 'Site Investigation', by Oliver Leach, in *Excavator.* 13 *by* 8½ *in. over* 1,500 *pages.* 35*s. net, postage* 3*s.* 3*d.*

NEW EDITIONS

Town Design, *by Frederick Gibberd, C.B.E., F.R.I.B.A., M.T.P.I.* SIXTEEN PAGES have been added, also some new illustrations, in addition to general revision. *Third edition.* 10¾ *by* 9 *in.* 316 *pages, over* 720 *illustrations. Price unchanged* £3 13*s.* 6*d. net, postage* 2*s.*

The Modern Factory, *by Edward D. Mills, F.R.I.B.A.* FOR THIS, the second edition, all the plates have been scrapped and an entirely new selection—with a further 20 pages—chosen. 9¼ *by* 7¼ *in.* 216 *pages,* 64 *pages illustrations. Second edition revised and enlarged.* 36*s. net, postage* 1*s.* 6*d.*

London Night and Day: a guide to where the other books don't take you, *edited by Sam Lambert, illustrated by Osbert Lancaster.* 5¾ *by* 8¼ in., 104 *pages, pocketable. Seventh edition, still only* 5*s. net, postage* 7*d.*

a complete illustrated catalogue will be sent on application:

THE ARCHITECTURAL PRESS, 9-13, *Queen Anne's Gate, London, SW1*

designed by
EXPERTS
and built by
CRAFTSMEN

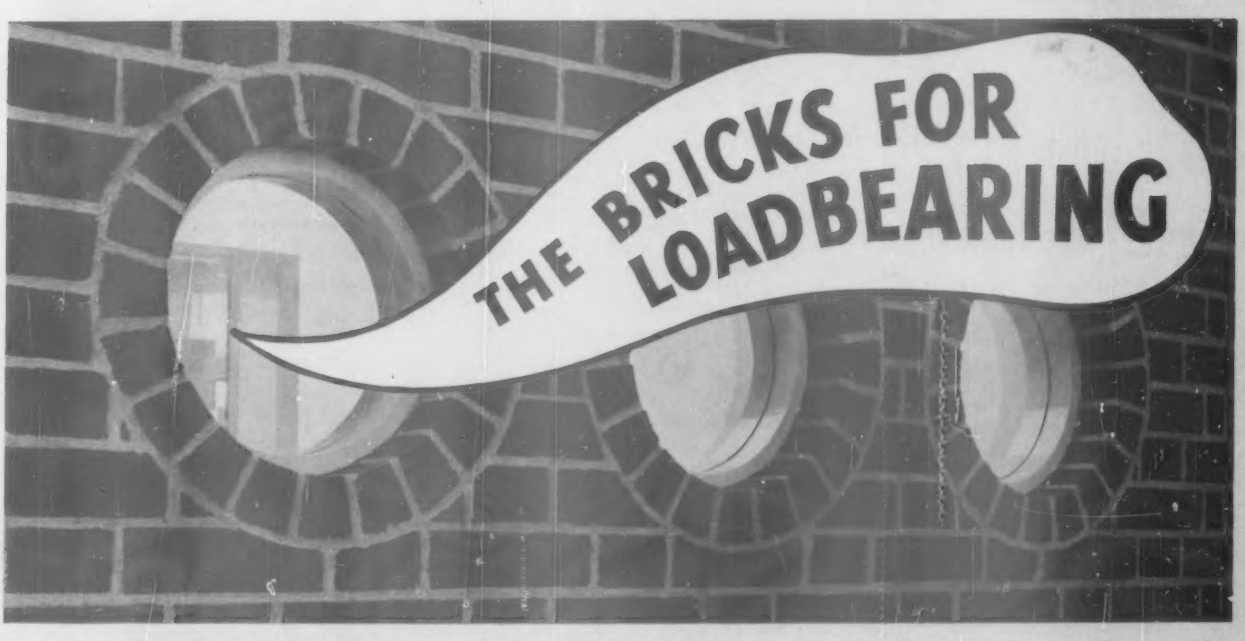
In common with many distinguished industrial and educational institutions the British Petroleum Research Station at Sunbury-on-Thames has specified Cygnet Joinery for its laboratories. Designed by experts, and built by craftsmen to meet the most exacting demands Cygnet Laboratory Furniture is obtainable in a large range of standard units or as specified. Our technical staff is available to advise you on laboratory design and layout.

Send now for full details.

See our Stand 735, Empire Hall, First Floor, Building Exhibition, Olympia.

CYGNET JOINERY LTD · HIGHER SWAN LANE : BOLTON

TELEPHONE : BOLTON 10140 (TEN LINES)



ACCRINGTON
'Nori' Bricks

The use of brick for high loadbearing purposes need not entail any sacrifice of appearance.

Combining the crushing strength of Class A Engineering Bricks with the aesthetic qualities of the highest grade facings, Accrington 'Nori' Bricks are the obvious choice for all heavy-duty structures.

Samples on request

THE ACCRINGTON BRICK & TILE CO. LTD., ACCRINGTON, LANCS. 'PHONE: ACCRINGTON 2684

Southern Representative: L. G. Rogers, Oak Lea, Main Road, Westerham Hill, Kent. Telephone No.: Biggin Hill 0538

ARBOLITE

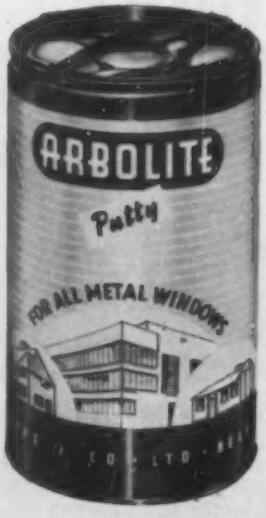
METAL CASEMENT PUTTY

the perfect KEY

for glazing METAL WINDOWS

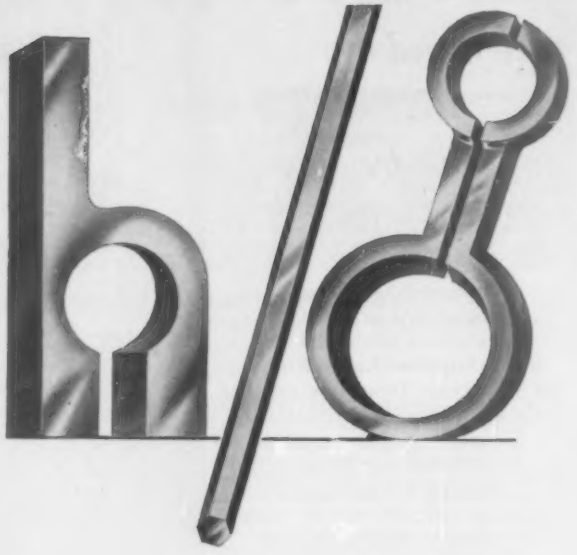
ARBOLITE Metal Casement Putty is the key to the successful glazing of metal windows. No cracking and no wrinkling because it contains ARBOSYN which ensures greater durability, better keying properties, good setting properties, easy working consistency and longer keg life.

The master mastic that bonds permanently and withstands extremes of **EXPANSION** and **CONTRACTION**



ADSHEAD RATCLIFFE & CO. LTD.

BELPER · DERBY Tel.: Belper 351/2



Secret Formula ?

No, it simply means that McKechnie have the answer to every production need. Whether extruded sections in brass, bronze, nickel silver or copper from over 20,000 dies available, or brass rods in straight lengths or coils for high speed turning and screwing, it is the consistently high quality and faultless finish of McKechnie products that has made them the choice of Industry throughout the world.

Mc KECHNIE

HIGH QUALITY

EXTRUDED SECTIONS and BRASS RODS for Industry

McKECHNIE BROTHERS LIMITED

14 Berkeley Street, London, W.1. Telephone: Hyde Park 9841/7.
Metal Works: **Rotton Park Street, Birmingham 16 and Aldridge, Staffs.**
Other Factories at **Widnes, London, South Africa, New Zealand.**
Branch Offices at **London, Manchester, Leeds, Gloucester, Newcastle-upon-Tyne, Glasgow (Agents J. Hood & Co.), Paris.**

MANN
AND
FLEMING
Decorators

120B, MOUNT ST., LONDON, W.1

GROSVENOR 2770 & 2723

Main Reception, Messrs. Young & Rubicam

RECENT COMMERCIAL CONTRACTS

for

DECORATION & FURNISHINGS

designed and carried out include :—

DIRECTORS' OFFICES FOR :—

Messrs. Dolan & Co.
,, Young & Rubicam.
,, Calor Gas Co.
,, Silver City Airway.
,, Electronic Instruments.
,, M.C.A. (England).
,, Campbell Soups.

LUXURY SUITES FOR :—

Dorchester Hotel, London.
Westbury Hotel, London.

How efficient is a Power Station?

The term 'efficient' is often used loosely as an alternative to 'effective'. In Electricity Supply, however, the 'efficiency' of a power station has a well-defined and exact connotation. It indicates the heat energy expended to produce a unit of electricity.

Progressively, new power stations are more 'efficient' than their predecessors — they burn less coal for a given output. The engineers of the Central Electricity Generating Board are producing designs which, by increasing efficiency, enable power stations to offset substantially the rising costs of materials.

In spite of increased efficiency, however, the available supply of suitable coal cannot long keep pace with the demand for electricity, which doubles every decade. The gap that threatens in the not distant future will now be filled by the rapidly expanding nuclear power programme.

CEGB

THE CENTRAL ELECTRICITY GENERATING BOARD

HARRISON QUALITY PRODUCTS

drape H QUALITY '950' SERIES

Harrison (Birmingham) Ltd., P.O. Box 233. Bradford St. Works. Birmingham, 12

WELSH SLATE

Tough, colourful, economical — that's Welsh Slate, proved by generations of weather and corrosion resistance to be still the most trouble-free — and the best — roofing material for public buildings and housing schemes.

gives a handsome and durable roof with minimum maintenance costs!

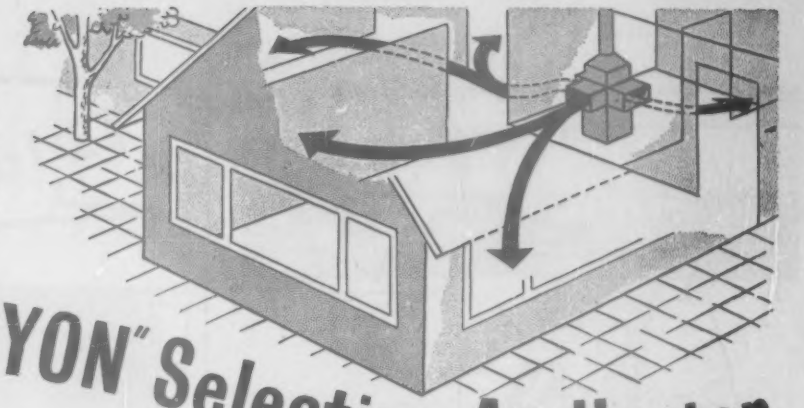
All enquiries to J. Richmond, F.C.A. (Secretary)

NORTH WALES SLATE QUARRIES ASSOCIATION

267, High Street, Bangor, Caerns, North Wales Tel. : 2855

RAPID HEATING

is just one of the good reasons why more and more architects have discovered the many technical and practical advantages of the



SUGG "HALCYON" Selective Air Heater

Illustration of Halcyon Model F. 45 shown with the ducting removed.

A TEMPERATURE RISE OF UP TO 20°F.
CAN BE SUPPLIED TO AN AVERAGE ROOM IN ABOUT 10 MINUTES.

This "warmth where you want it" equipment presents no difficulties in installation, by simple duct system, suitable for houses, bungalows and flats.

It is compact, easy to control and economical to maintain. The "HALCYON" time-switch can be set to operate automatically at any required time.

CAPITAL COST UNDER £80

Choose "HALCYON"—for a new high standard of near-central domestic heating. Thousands already in use.

Literature and full technical details available from

WILLIAM SUGG & COMPANY LTD., 67-73, Regency Street, London, S.W.1
Telephone VICtoria 3211

looking ahead

Advance information on major building projects now taking shape on the drawing boards of many of Britain's top-ranking architects, in private practice or heading local authority and government departments, will be published in the January 1960 issue of the AR—the seventh in the series of special Preview numbers.

Over sixty projects will be described by way of plans, perspective sketches, illustrations of models and constructional details, and will include buildings in almost every category. Architects whose work will be shown include Architects' Co-Partnership, Basil Spence and Partners, Chamberlin, Powell and Bon, and many others, reading right through the alphabet to Yorke, Rosenberg and Mardall.

Many readers who normally share copies of the AR like to have a Preview issue to keep on their own shelves, and a limited number of extra copies will be printed to meet the demand.

If you are not a regular subscriber it is advisable to reserve your Preview copy beforehand; orders received will be dealt with in strict rotation. The price is 6s. 6d., postage paid. Please send your cheque/PO with your order or, if you prefer, we will invoice you on publication.

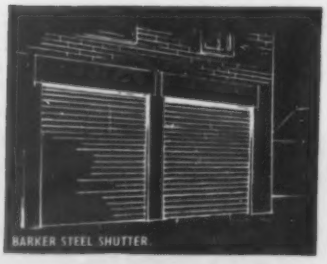
Subscription Manager, THE ARCHITECTURAL REVIEW,
9-13, Queen Anne's Gate, Westminster, S.W.1.

Wise heads behind wise hands build

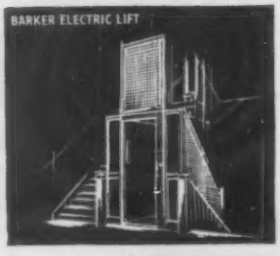
Wise heads on the shoulders of applications engineers, and designers, with the accumulated know-how of over 90 years experience at their fingertips, stand behind the hands of craftsmen who know more about their job than words could ever teach . . . to whose sensitive touch metals respond like sculptor's clay. Together heads and hands are responsible for the perfection of design, construction and performance that distinguish Barker products from all others.

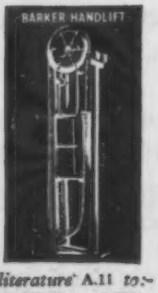
BARKER

ROLLER SHUTTERS
ELECTRIC LIFTS
HAND LIFTS
DELIVERY HOISTS


BARKER STEEL SHUTTER

BARKER WOOD SHUTTER


BARKER ELECTRIC LIFT


BARKER HANDLIFT

BARKER

For full details of Barker products send for illustrated literature A.11 *to:-*

JOHN BARKER & SONS (ENGINEERS) LTD.

Union Street, Ancoats, Manchester 4. Tel: COLlyhurst 2018
London: 71 Strawberry Vale, Twickenham.
Telephone: POPesgrove 0794
Scotland: W. J. Leonard, 51 Braemar Place, Aberdeen.

EX ACTIS
PROBEMUR

Library and Office Block: I.C.I. Research Laboratories, Plastics Division, Welwyn Garden City
Architects: J. Douglass Mathews & Partners

WHAT HAS WIRE to do with REINFORCED CONCRETE? Quite a lot!

Reinforcing mesh is made from wire, which is drawn at our headquarters in Wakefield; thousands of tons of it and much is fabricated into mesh.

We are the experts who ensure that this reinforcement is used to the most economical advantage in the reinforced concrete structures we design. Of course, we design in bars as well, which are also fabricated in Wakefield.

The many buildings which have gone up to our designs justify our claims — **so let us be judged by our works.**

THE SPENCER WIRE CO (DEVELOPMENTS) LTD

Reinforced Concrete Engineers

53, VICTORIA ST, LONDON, S.W.1

Telephone
ABBey 6373-5

Da1259AR

Kenyons are pleased to announce the new "Kilnoise" Cellular Acoustic Tile. In harmony with traditional or contemporary decor, the tile is all mineral and can be fixed by either adhesive or mechanical suspension. Highest acoustic value and really low cost are but two of the many reasons why this tile is the best. Test figures available on request.

and dimensionally stable

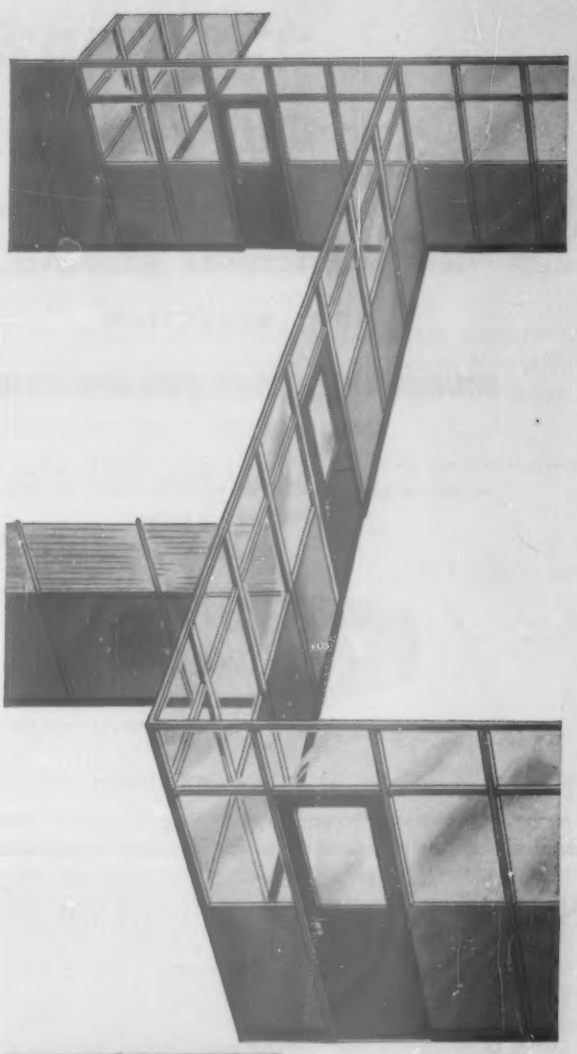
"KILNOISE"
TRADE MARK

CELLULAR ACOUSTIC TILE

Made in England by:-

WILLIAM KENYON & SONS (MetaMica) LTD
CHAPEL FIELD WORKS · DUKINFIELD · CHESHIRE
Telephone: Ashton-under-Lyne 1614/7 *and* 3673/6
Also at London and Glasgow

MM.21



Milner

DESIGN Milner Steel Partitioning is unit constructed. It is easily transferable, sound and fire-resistant, and—above all—good looking.

CONSTRUCT The ready-made units of differing shapes and sizes can be combined in a great variety of ways. This enables our office partitioning to be "tailored" to suit particular requirements.

ADVISE We have experienced consultants ready at all times to offer you suggestions as to the planned partitioning of *your* office, bearing in mind the special factors involved.

ERECT Our own lorries bring the necessary units direct to the site. Highly skilled erection gangs assemble them quickly and efficiently.

Milner

Steel Equipment Division of **HALL ENGINEERING LTD**
Makers of office equipment, shutters and partitioning

Central Sales Office:
60 Rochester Row, London, S.W.1
Phone: VICtoria 5631

Branches at: Birmingham, Bristol, Glasgow, Leeds, Liverpool & Manchester

THE DARLINGTON INSULATION CO. LTD.

specialise in: **SUSPENDED DECORATIVE & ACOUSTIC CEILINGS**

ARCHITECTURAL ACOUSTICS, SOUND ABSORBING DEVICES

& NOISE REDUCTION

....to benefit from their know-how and experience, simply write to:

THE DARLINGTON INSULATION CO. LTD.
(A member of the Darlington Group of Companies)
Tynos Works, Scotswood, Newcastle-upon-Tyne, 5.

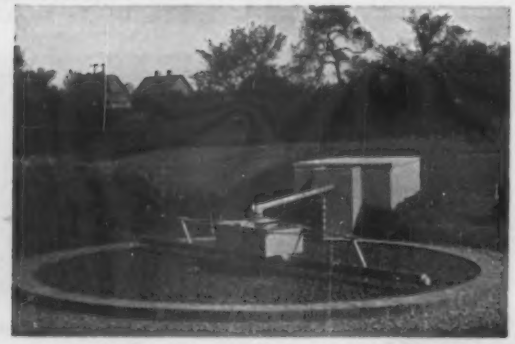
Telephone: Lemington 674658

CONTRACTORS FOR THE CELOTEX SYSTEMS

A.1

SEWAGE PURIFICATION

for Country Houses



Installation for a Housing Scheme

TUKE & BELL LTD.

1 Lincoln's Inn Fields
London, W.C.2

Works: Lichfield, Staffs

KINNEAR SHUTTERS

by the makers of Kinylon and Kinrod Grilles

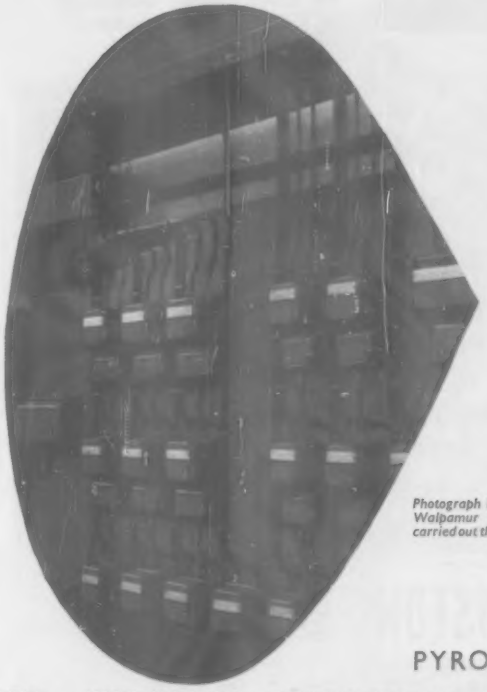
solve the problem

of wide entrances and a sloping road. The bottom rails on these Kinnear Shutters are shaped to accommodate the rise of the road, to ensure good closure and complete weather protection.

Please send for illustrated leaflet 10B.
ARTHUR L. GIBSON & CO. LTD., TWICKENHAM, MIDDX.
Telephone: Popesgrove 2276 Birmingham: Highbury 2804
Glasgow: Halfway 2928 Manchester: Central 1008 Cardiff: 51428

Pyrotenax *Experience*

ensures a freedom from fire risk installation ....



Photograph by courtesy Walpamur Limited, who carried out this installation.

Inherently safe—unfailing life-long dependability—these are but two of the many unique advantages that have made 'Pyrotenax' the considered choice of famous concerns the world over.

As an example, we illustrate a section of the starter and control gear wiring for the cellulose mixing plant at the Walpamur Works. Here safety—freedom from fire risk—is paramount. And the 20 years **'Pyrotenax'** specialist experience gives that assurance.

non-fire causing — heat resisting — moisture-proof — non-ageing — rust-proof
safe against overload — resistant to mechanical maltreatment
resistant to noise transmission

Write for full details and Technical Data No. F120

Pyrotenax
M.I. COPPER COVERED CABLE

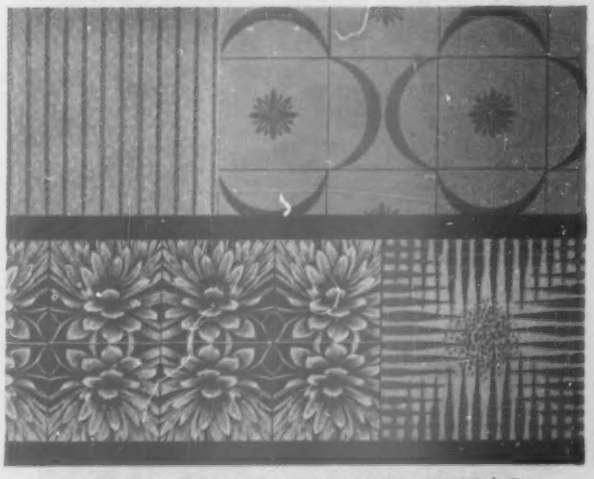
The use of the trade mark 'Pyrotenax' is exclusive to the products of this Company and its associates.

PYROTENAX LIMITED **HEBBURN-ON-TYNE** **Hebburn 83-2244/8**

GD120 **LONDON:** *VICtoria 3745* · **BIRMINGHAM:** *Midland 1265* · **MANCHESTER:** *Deansgate 3346/7* · **LEEDS:** *Leeds 27826* · **GLASGOW:** *City 3641/2* · **CARDIFF:** *Cardiff 23689*

JAMES
make good METAL WINDOWS

W. JAMES & CO. LTD.
Hythe Rd. Willesden Junction
LADbroke 6471 (6 lines) N.W.10



TILES THAT CREATE IDEAS

MALKIN
screen printed tiles

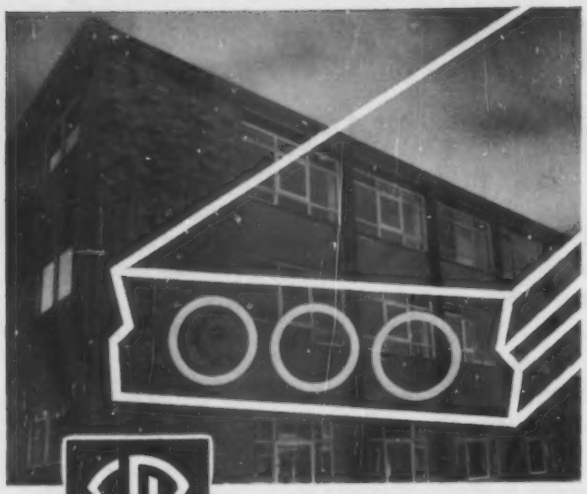
This exciting new range of Malkin screen printed tiles is designed to give imaginative inspiration for wall decoration. Write for our illustrated leaflet and see the full range for yourself.

Write for illustrations and details

THE MALKIN TILES (BURSLEM) LIMITED

Burslem Stoke-on-Trent Telephone Stoke-on-Trent 37287
Members of the Glazed and Floor Tile Manufacturers Association

1692



SPL

PRECAST HOLLOW FLOORS & ROOFS

Shockcrete units are being used extensively for Schools, Flats and Industrial Buildings. Manufactured under factory conditions by advanced techniques, they can be speedily erected by our own labour force.

Shockcrete Units are:

- **QUALITY CONTROLLED AT EVERY STAGE**
- **ECONOMICALLY PRODUCED TO CP114 (1957)**
- **DELIVERED TO CONTRACT WITHOUT FAIL**

A skilled and experienced staff of Engineers and Designers are available to undertake design and layouts for Clients, and co-operate at every stage until completion of contract.

Call in

SHOCKCRETE

PRODUCTS LTD.

RYE HOUSE WORKS, HODDESDON, HERTS. HODDESDON 3037

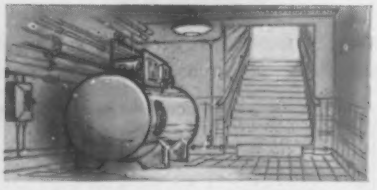
Also for Precast Concrete Piles and Tunnel Linings.

WATER SERVICES

in multi-storey buildings

Architects: C. T. Redgrave and Clarke, L.A., A(F.R.I.B.A. Coventry.
Engineering Consultants: Philip Thomas and Partners, Leamington Spa.

"BRUSTON" Auto-Pneumatic booster sets



200 to 30,000 gallons per hour

Our Technical Department is at your service. Fully illustrated literature available upon request.

Designed to respond automatically to demand, built as self-contained units.

To provide high-pressure water supplies in modern buildings where top-floor services are on or near the hydraulic gradient. These standard units, developed to meet the requirements of constant and unfailing water supply at high levels, are designed to operate in the confined spaces in many large buildings, such as blocks of offices, flats, hospitals, factories etc.

G. C. PILLINGER & Co. LTD

(Dept AR)

SUTTON COMMON ROAD,
SUTTON, SURREY.

Telephone: Fairlands 8844 (5 lines)
Grams: "Pillinger, Sutton, Surrey".
Works: **Derwent Works,**
602 Purley Way, Croydon, Surrey
Also at Exeter, Cork and Dublin

BRITISH HOME STORES
MIDDLESBROUGH
G. W. Clarke Esq. L.R.I.B.A. Chief Architect.

HATHERNWARE

Send for details to:- Hathernware Ltd. Dept. AR
Loughborough, Leics. Tel. 273.

Constructional Faience blockwork cornices and window surrounds, also Faience Slabs to ground floor and over entrances.

dmHL79

LITTLEWOODS MAIL ORDER STORES LTD

require a

GROUP LEADER ARCHITECT

for the Construction Department

This progressive and expanding company is undertaking an extensive building development programme and a variety of interesting projects are in progress throughout the British Isles. The vacancy should appeal particularly to registered architects with several years experience who seek an opportunity to control a small team of architectural assistants. Possession of the A.R.I.B.A. qualification would be a recommendation. Every opportunity will be given to exercise initiative in a well established department. A generous salary will be paid. Staff Life Assurance and Pension Scheme. Five-day week.

Initial interviews, conducted without obligation on either side, can be arranged in London or the provinces at times (including evenings) to suit the convenience of applicants. Enquiries, which will be treated in the strictest confidence, should be addressed to:

Employment Manager (GLA/210/AR)
Littlewoods Mail Order Stores Ltd
Spinney House, Church Street, Liverpool, X

LITTLEWOODS MAIL ORDER STORES LTD

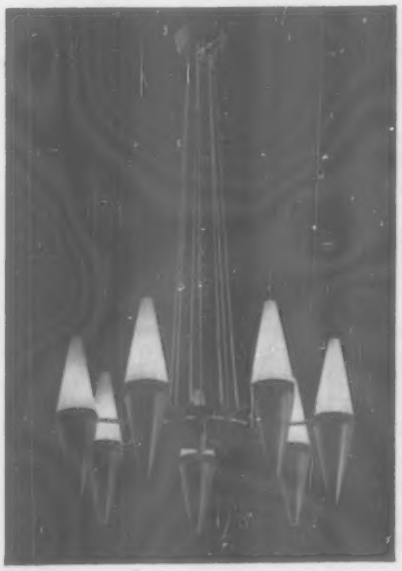
require

ARCHITECTURAL ASSISTANTS

for the Construction Department

This progressive and expanding company is undertaking an extensive building development programme and a variety of interesting projects are in progress throughout the British Isles. The vacancies should appeal particularly to young men who have just become Associates of the R.I.B.A. or have reached Inter R.I.B.A., although Building Construction Draughtsmen of H.N.C. standard will also be considered. They will be given every encouragement to exercise initiative and acquire wider experience in a well established department. Generous starting salaries. Staff Life Assurance and Pension Scheme. Five-day week. Applications, which will be treated in strict confidence, should be addressed to:

Employment Manager (AA/211/AR)
Littlewoods Mail Order Stores Ltd
Spinney House, Church Street, Liverpool, X



light for living

PK70/7

A wide range of Glass fittings for home and industrial use.

For the latest fittings visit our Showroom at Holbein Place or write for illustrated literature.

HISCOCK APPLEBY and Co Ltd

12-16 Holbein Place · Sloane Square · London S.W.1
Sloane 2225/6/7 *Cables: Liteforliv London*

LATEX and PLASTIC FOAM CUSHIONING for LONG LENGTH SEATING

as used in

- HOTELS, BARS & CLUBS
- MUNICIPAL BUILDINGS
- RECEPTION AND WAITING ROOMS
- SCHOOLS AND LECTURE HALLS
- WINDOW BAYS AND ALCOVES
- EXHIBITION STANDS

Dunlopillo cushions and backrests supplied to any specification, uncovered or covered and ready for installation on site.

SEND FOR ILLUSTRATED LIST

LATEX UPHOLSTERY LTD.
THE LEADING SPECIALISTS
41, LONSDALE ROAD, LONDON, W.11
Telephone: BAYSWATER 6262-5

* AR * readers * are invited * to turn to page *

GIVE

* cxii * for the * solution to * a good number *

BOOKS

* of * their * most urgent * seasonal worries *

THIS XMAS

ALPHABETICAL LIST TO ADVERTISERS

	PAGE
Accrington Brick & Tile Co. Ltd.	cxiii
Adamsez, Ltd.	lv
Adshead Ratcliffe & Co. Ltd.	cxiv
Air Heating Ltd.	xii
Airscrew Co. & Jicwood, Ltd.	xx
Alcan (U.K.), Ltd.	lvi, lvii
Alexandria Trading Corporation, Ltd.	ii
Allom Heffer & Co. Ltd.	cviii
Alumin Building Components, Ltd.	xxxiii
Anderson Construction Co. Ltd.	xxxv
Architectural Press, Ltd.	cvi, cxii, cxvii, cxxiii
Atlas Lighting Co. Ltd.	xcvi
Austin, James & Sons (Dewsbury), Ltd.	xxv
Automatic Telephone & Electric Co. Ltd.	xxi
Barker, John, & Son (Engineers), Ltd.	cxviii
Biddle, F. H., Ltd.	cxix
Bilston Foundries, Ltd.	xxvi
B.I.P. Reinforced Products, Ltd.	l
Bolding, John, & Sons, Ltd.	xxxvii
Booth, John, & Sons (Bolton), Ltd.	xliv
Braby, Fredk., & Co. Ltd.	xxxviii
British Constructional Steelwork Assoc.	lxx
British Paints, Ltd.	ci
British Plimber, Ltd.	x
British Replin, Ltd.	xcviii
British Visqueen, Ltd.	xlii
Burgess Products, Ltd.	lviii
Cafferata & Co. Ltd.	xxix
Canadian Government	li
Carpet Trades, Ltd.	cxi
Central Electricity Generating Board	cxv
Claridges (Putney), Ltd.	cvi
Colthurst Symons & Co. Ltd.	lxvi
Conran Furniture	civ, cv
Copperad, Ltd.	lxxiv
Cox & Co. (Watford), Ltd.	vii
Crane, Ltd.	xxiii
Crittall Manufacturing Co. Ltd.	xc, xci
Cygnet Joinery, Ltd.	cxiii
Darlington Insulation Co. Ltd.	cxx
Dawnays, Ltd.	lxxxviii
Denton Edwards Paints, Ltd.	lix
Draftsele (London), Ltd.	lxxvi
Edinburgh Weavers, Ltd.	lxviii
English Joinery Manufacturers' Association (Incorporated)	xxxi
Engravers Guild, Ltd.	cx
Esavian, Ltd.	xxiv
Evode, Ltd.	lxxxi
Falk Stadelmann & Co. Ltd.	xlviii
Fibreglass, Ltd.	xxxv
Freeman, Joseph, Sons & Co. Ltd.	xvi
Frenger Ceilings, Ltd.	lxiv, lxv
Gascoigne, Geo. H., Co. Ltd.	lxxiii
Gay, R., & Co. Ltd.	xxxvi
General Electric Co. Ltd.	iv, v, liv
Gent & Co. Ltd.	xliii
Gibson, Arthur L., & Co. Ltd.	cxx
Glazed & Floor Tile Manufacturers' Assn.	lxiii
Gliksten, J., & Sons, Ltd.	lxii
Goodlass Wall & Co. Ltd.	lxxvii
Granwood Flooring Co. Ltd.	xcix
Hall Engineering Co. Ltd.	cxix
Hammond & Champness, Ltd.	cii
Harrisons (Birmingham), Ltd.	cxvi
Harvey, G. A., & Co. (London), Ltd.	xciv
Hathernware, Ltd.	cxxiii
H.D. Foundations, Ltd.	xxxii
Henderson, P. C., & Co. Ltd.	lxxv
Heywood, W. H., & Co. Ltd.	xxviii
Hille of London, Ltd.	lxvii
Hills (West Bromwich), Ltd.	lxxii
Hiscock, Appleby & Co. Ltd.	cxxiii
Hope, Henry, & Sons, Ltd.	lxxviii
Ideal Boilers & Radiators, Ltd.	xviii, lxxix
Imperial Chemical Industries, Ltd.	xxii
Intermit, Ltd.	xlv
James, W., & Co. Ltd.	cxxi
Kenyon, William, & Sons (MetaMica), Ltd.	cxix
Latex Upholstery, Ltd.	cxxiii
Leaderflush, Ltd.	xv
Littlewoods Mail Order Stores, Ltd.	cxxiii
London Brick Co. Ltd.	xlix
London Electric Firm Ltd.	cvii
Lucas, Joseph, Ltd.	lxxxiv
Lumenated Ceilings, Ltd.	lxxxii
Malkin Tiles, Ltd.	cxxi
Mann & Fleming, Ltd.	cxv
Mason, Joseph, & Co. Ltd.	ix
Matthew Hall & Co. Ltd.	xcii
McKechnie Bros., Ltd.	cxiv
Mellor Bromley (Air Conditioning), Ltd.	cxxiv
Midland Electric Manufacturing Co. Ltd.	cviii
National Coal Board	xlvi, xlvii
Natural Asphalte Mine-owners & Manufacturers' Council	lxxxix
Newman, William, & Sons, Ltd.	xi
North Wales Slate Quarries Association	cxvi
Omnia Constructions, Ltd.	lxxi
Parnall, George, & Co. Ltd.	xix
Pilkington Bros., Ltd.	xxvii, liii, liii
Pilkington Tiles, Ltd.	lxxxvi
Pillinger, G. C., & Co. Ltd.	cxxii
Pressure Piling Co. Ltd.	viii
Pyrotenax, Ltd.	cxxi
Race, Ernest, Ltd.	cxi
Rawlplug Co. Ltd.	xiii
Redpath Brown, Ltd.	iii
Riley (I.C.) Products, Ltd.	xxxix
Roneo, Ltd.	xcviii
Sanderson, Arthur, & Sons, Ltd.	xvii
Sankey, J. H., Ltd.	lxxxiii
Shanks & Co. Ltd.	xcvii
Shockcrete, Ltd.	cxxii
Simms, W. J., Sons & Cooke, Ltd.	xli, ciii
Smith, Thomas, & Son, Ltd.	vi
Smith & Walton, Ltd.	xl
Sound Control, Ltd.	xciii
Spectrum Fabrics, Ltd.	c
Spencer Wire Co. (Development), Ltd.	cxviii
Sugg, William, & Co. Ltd.	cxvii
Tarmac Vinculum, Ltd.	xxxiv
Taylor Woodrow (Arcon), Ltd.	cix
Thermalite, Ltd.	cxxvi
Tuke & Bell, Ltd.	cxx
Tyler, E. W., Ltd.	lxxxv
Walker Crossweller & Co. Ltd.	xcv
Wandsworth Electrical Manufacturing Co. Ltd.	xiv
Warerite, Ltd.	xxx
West's Piling & Construction Co. Ltd.	lxxx
Williams (John) of Cardiff, Ltd.	lxxxvii
Williams & Williams, Ltd.	lx, lxi

Mellor Bromley

AIR CONDITIONING

SUPPLYING

18,800,000 cubic feet of air per hour

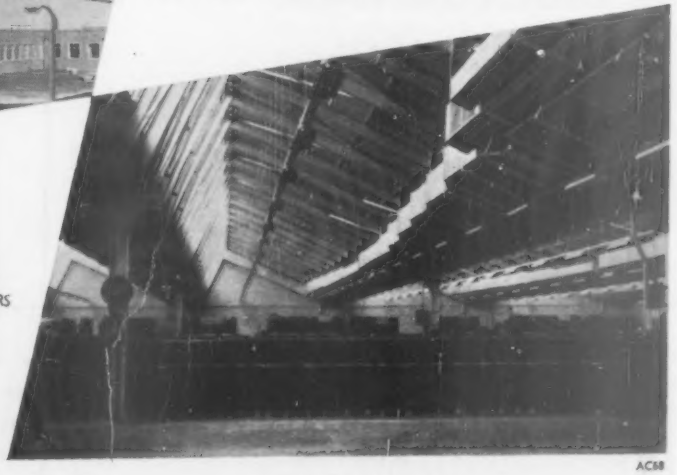
EXTRACTING

15,100,000 cubic feet of air per hour

at the new Jute spinning factory of

JUTE INDUSTRIES LTD. DOUGLASFIELD

Architects and Consultants: Sir Alexander Gibb & Partners, London



MELLOR BROMLEY (AIR CONDITIONING) LTD.

HEATING, VENTILATING & AIR CONDITIONING ENGINEERS & CONTRACTORS

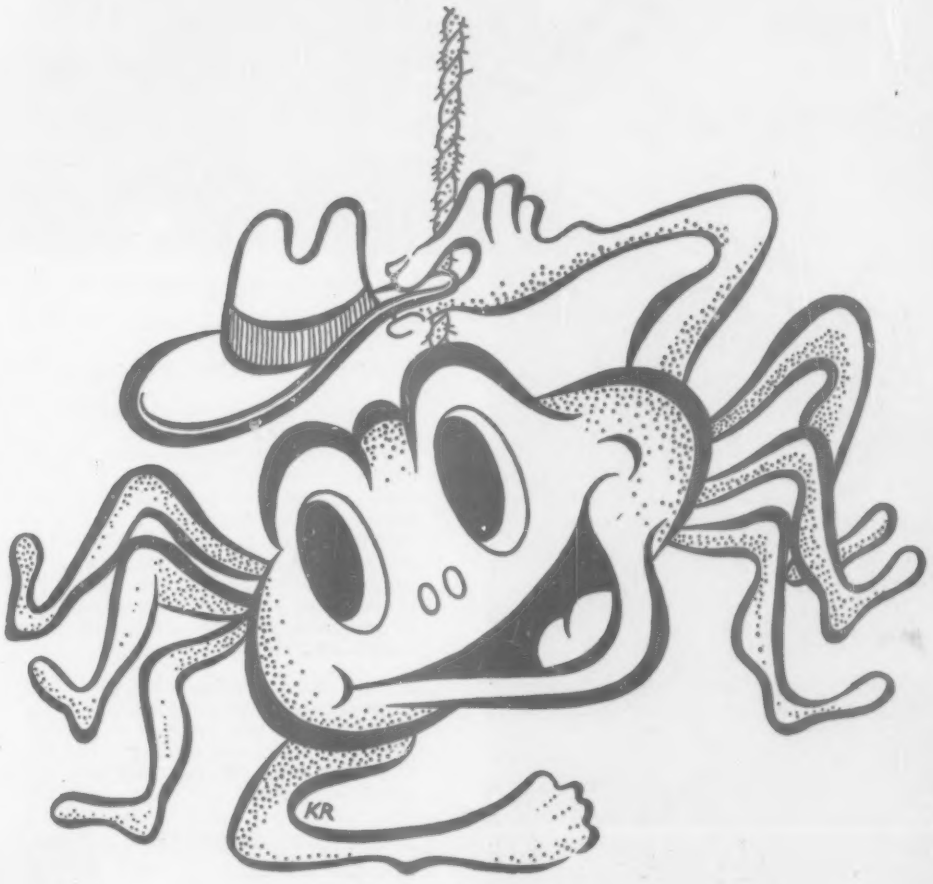
BARKBY ROAD, LEICESTER

Telephone: Leicester 66651

MEMBER OF THE BENTLEY GROUP

AC58

SUSPENSION...

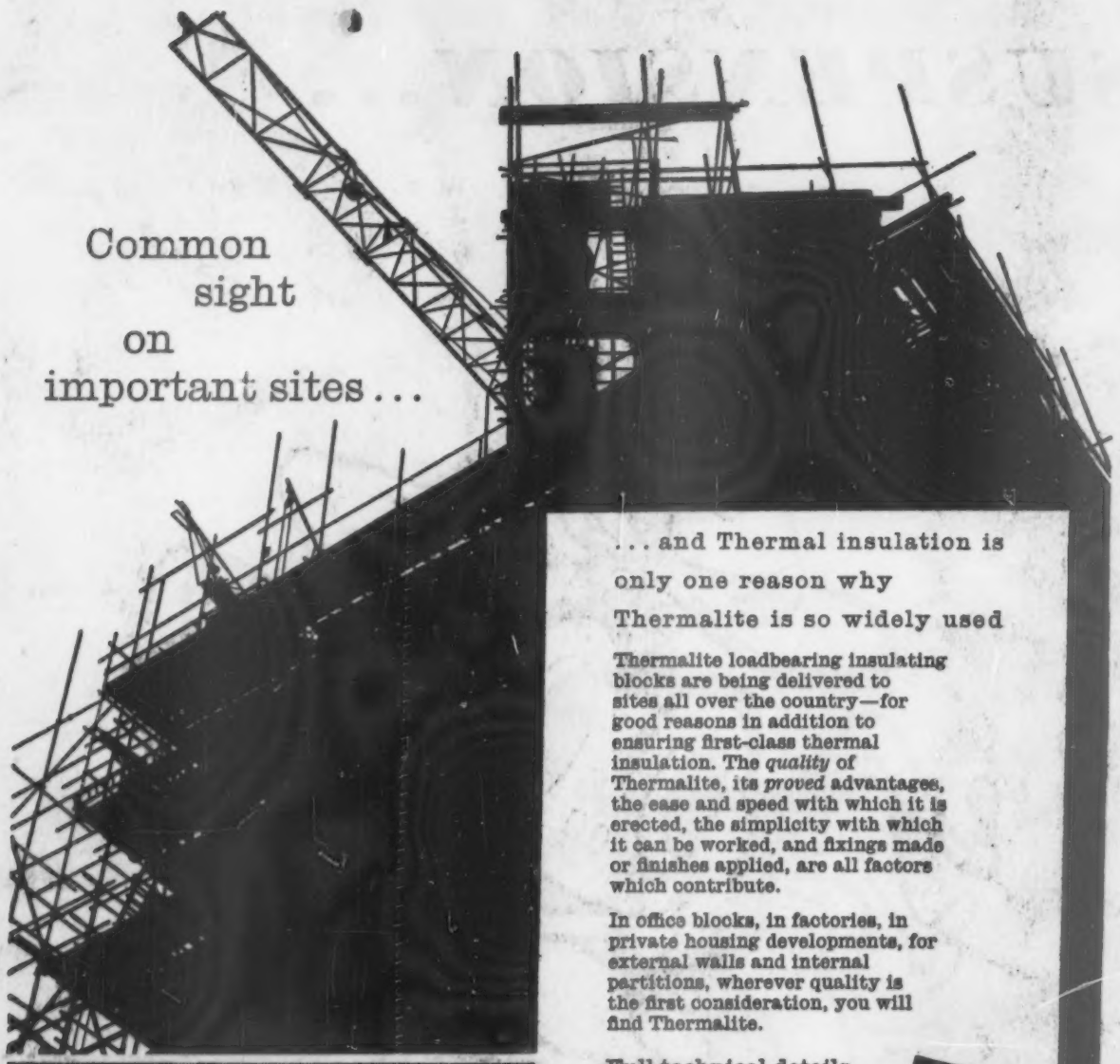


. . . systems are many and varied, and include those connected with trousers, stockings and the type illustrated here.

We are not arachnologists and frankly we don't know how he does it, but ask us about suspended ceilings and all that goes with them and you've come to the right parlour.

ANDERSON CONSTRUCTION COMPANY LIMITED
Cambridge Road, Twickenham, Middx. POPesgrove 4444

Printed in Great Britain for the Proprietors of "The Architects' Journal," of "The Architectural Review," and of "Specification" (The Architectural Press, Ltd.) 9-13, Queen Anne's Gate, Westminster, S.W.1, by Knapp, Drewett & Sons Ltd., by appointment to Her Majesty the Queen, Printers, Kingston-on-Thames.
Editorial illustrations engraved by The Engravers Guild Ltd., Windsor House, 23/26, Cursitor Street, London, E.C.4.
Entered in the New York Post Office as Second Class Matter



Common sight on important sites...

7-14 days delivery from Midland and Southern Factories

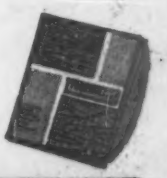
... and Thermal insulation is only one reason why Thermalite is so widely used

Thermalite loadbearing insulating blocks are being delivered to sites all over the country—for good reasons in addition to ensuring first-class thermal insulation. The *quality* of Thermalite, its *proved* advantages, the ease and speed with which it is erected, the simplicity with which it can be worked, and fixings made or finishes applied, are all factors which contribute.

In office blocks, in factories, in private housing developments, for external walls and internal partitions, wherever quality is the first consideration, you will find Thermalite.

Full technical details are given here.

You are invited to write for a copy.



THERMALITE

The first name in loadbearing insulation

THERMALITE YTONG LIMITED

Hams Hall, Lea Marston, Sutton Coldfield, Warwickshire. Telephone: Coleshill 2081

A LAING COMPANY